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SOUTHERN AGRICULTURIST.

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PART I.

ORIGINAL COMMUNICATIONS.

ART. XL.—*An Address delivered before the St. Andrew's Agricultural and Police Society, at the anniversary meeting, 1st April, 1834: by* J. JENKINS MIKELL.

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Gentlemen,—Nothing but a sense of imperative duty, could have induced me to respond to the call, which you have made upon my inexperience. I say imperative, because, formed, as we are, for the mutual improvement of each other, every member should be ready to lend his efforts, however humble, to the advancement of a science, like the one, we have assembled to commemorate. Indeed, the example of those who have preceded me, in the discharge of my present office, independent of other circumstances, has taught me, that every liberal agriculturist owes his duties, as well to the *public*, as to *himself*. It was with this noble sentiment, that the kings of ancient Persia, willing to testify their honourable esteem for agriculture, threw aside the robes of royalty and distinction, to mingle in the annual festivals of the husbandman. It was with such a sentiment that the ancient Greeks and Romans placed agriculture among the divinities of their religion; and impressed upon its votaries the maxim—that care and diligence in cultivating the soil, deserved more

notice from their gods, than the ascriptions of ten thousand prayers, a maxim so replete with wisdom and justice, that Christian revelation has since embodied it, in the homely, yet forcible precept, that, "he who will not work, neither let him eat."

The high birth and rank which the ancients accorded to agriculture—the liberal patronage they extended to its followers—while it speaks much for their wisdom—at the same time, casts a marked and deserved censure upon those of our age, who so much neglect it. Viewing it as the means of imparting energy and physical importance to the State, they protected it by the powerful aids of legislation, and even placed their veneration for it so high, as to deify the very animals engaged in its pursuits. With us, it would be a cause of gratulation could we say half so much. But unfortunately, the case is quite the reverse. Fostered and protected in other lands, agriculture in ours is comparatively neglected,—no salutary legislation lends its assisting hand—no schools or professorships unfold its elementary principles—and thus, degraded from its proper station, with too many of our planters, it has dwindled from the dignity of a science, into the insignificence of a mere occupation. I am proud, however, in the reflection, that this remark is not universal. There are some exceptions, and among them, the Society which I have the honour to address is not among the least.

It would be a pleasing task, gentlemen, did time permit me, to revert to the short but successful history of this Society. It would present us the history of the science dismembered and broken up—without one fixed principle to guide us—with each pursuing his own course, and no two, pursuing the same. It would place us at a time, when upon this Island, the materials for the science were various and ample—when the hearts of all were united, but their actions as divided as pole from pole—when the artisans were ready, but wanted concentration to erect the structure. It would present all these obstacles, combining and confederating as they did, to destroy the science—suddenly united in the formation of a Society, based upon the principles of mutual sympathies, and a wide spread philanthrophy. But this is not the time to dwell upon such reminiscences. It is enough that we feel them. I

shall, therefore, proceed to add my small stock of labour to the annual fund by some brief remarks.

1st. Upon the causes of exhaustion of our lands, and

2d. The means of restoring such exhaustion, and consequently producing fertility in its stead.

Fertility is the result of a proportionate admixture of the four primitive earths, with the carbonaceous principle. It is self-evident, then, that whatever disturbs this arrangement, must, of necessity, impair its fertility.

The first and prominent cause, of the exhaustion of our lands, is the unchanging cultivation of particular plants, without returning to the soil, the particular food or substance, which those plants have extracted from it; every plant has its own food; and in the process of vegetation it displays wonderful discrimination in the selection of that food. If this be true, it is evident that in the continuous cultivation of any particular plant upon a given portion of land, it will, in time, exhaust it of the particular ingredient upon which it feeds, unless artificially supplied; as illustrative of this position, I have been assured by an experienced planter, that a piece of land, which he had every other year, for nearly twenty years, cultivated in potatoes, has of late years become so "sensative," that it is almost an impossibility to set a crop of potatoes on it, notwithstanding his constant practice of manuring it, with a moveable cow-pen. It will be asked, "How are we to ascertain what are the peculiar properties of soil which the different plants consume?" It is answered in this way. The soil upon which the plant grows, together with the plant itself, must be separately analized, and the results or substances found common to both soil and plant, are its true fold. But it may be said, "we are as far from it as ever?" "Is it expected of every planter, that he is a chemist?" I answer, there was a time when this plea was admissible, when the brute force of bones and muscles to speed and direct the plough, was held more important than the power of mind to conceive and supply, but that it is no longer—that, an acquaintance with chemistry and natural philosoply, is now viewed as a necessary adjunct of a polite education—that, the waste of time, labour and wealth, have decreed it as indispensable to successful husbandry—that, the standard of modern agriculture is rais-

ed, and that, this most valuable interest of civilized life, is now classed among the sciences.

A second cause, is the robbery we commit upon our lands by transporting to market what they spontaneously produce as the grasses, or the removal of the offal of a cultivated crop, as the blades and stalks of corn or cotton crop, without making a suitable return. I say suitable, because we frequently see the stalks taken away for litter; and when payment is required, it is made either with pine-straw or some other litter from the homestead. This may appear perfectly fair to those who have not examined the subject carefully. But to those who have, I think it must be evident, that as the vegetable growth of every soil extracts a portion of that soil, and in part becomes identified with it, in substance, to remove which, and to replace it with others, will be to disturb the arrangement necessary to fertility. Wherever there is a removal without an adequate return, it is only necessary to state that some of the richest and most fertile portions of the globe have been impoverished by the practice. Agricultural history teaches us, that Sicily, once the granary of Italy, owes to this cause her sterility.

A third and very material cause, is overpasturage. I am no advocate, under the most careful management, of having our lands kept bare by the grazing of cattle, independent of the loss which they must sustain, by the unavoidable waste of animal excrement, the action of a southern sun upon the unprotected surface, must occasion an incalculable injury. But where a large stock is kept unpenned, or driven to some neighbouring plantation, to deposit their nightly droppings, with unerring certainty as to time, we may calculate the period of its exhaustion.

Other causes might be enumerated, but as they will appear in the second division of my subject, I pass them by for the present.

2d. The means by which exhaustion can be restored and fertility produced.

Exhaustion is the result of repeated croppings without the use of manure. Experience has abundantly testified, that perpetual fertility is a chimera—the fostered conceit of some favourite theory—that, whatever it may be of a future state, it certainly is not the gift of the present—that, the richest and most fertile soils must waste away

under constant and unassisted cultivation—that, the home and the birth-place of the deified Ceres, is now almost a barren waste—that, the finest and most fruitful portions of the globe have, by the improvidence of man, become a "waste howling wilderness," and even within the limits of our own observations, we see lands that were once generous in their productions, now destitute and exhausted. As a mean by which, fertility may be produced, I, first, advise, *rest*. The term *fallow*, is used by writers in a very vague and unsettled sense; by some, as synonimous with the sleep or undisturbed rest of land—by others, with the ploughing in of vegetable growth, with a view to decomposition, and exposure of the soil to atmospheric agency. I believe the latter signification the true one; but, as I consider the practice of the former best, I shall adopt it under that limitation. The soil, like the human constitution, worn and depressed by cares and fatigue, seeks rest as its natural restorer. To rest, it was indebted for its original fertility. And what gave fertility once, can give it again. But I do not call that land lying at rest which is permitted to grow up in rank and luxuriant weeds more exhausting than a cultivated crop. It is enough to extort a blush from the cheek of the inconsiderate planter, to see his lands untilled for the avowed and ostensible purpose of giving them rest; and at the same time, to see almost countless numbers of thistles springing up and sucking their choicest substances; it is like a man going to bed expecting rest, but encounters a night-mare, or "as if he did flee from a lion, and a bear met him." The inconsiderate planter who permits this state of things, not only does himself an injury, but is a nuisance to his neighbourhood. His crop of thistles when in flower will, with a favourite wind, carry the seeds of impoverisment to every surrounding plantation. The thistle and other weeds, should, before they run to seed, be chopped down, which will then become a covering to the soil, enriching it by their decays, and causing other vegetable growth, upon which they fall, to moulder and rot, and thus, unitedly become, not only a shield to the earth against the wasting influence of the sun, but also, a source of manure. I am aware, that the soil does not derive as much nutriment from these weeds in this way, as if they were embedded. But I am opposed, in a southern climate, and upon a sandy

soil, to the exposure of the naked earth to the action of the sun, or what is called a clean fallow; because I consider it, under these circumstances, little short of incineration or burning—a practice which agriculturists unitedly agree in denouncing upon sandy soils. In the fall of the year, when the influence of the sun is mild and mellow, I would have our lands ploughed or listed, in order that the decomposition of vegetable matter be in progress, which state is necessary to the growing of healthy plants. Besides the frost and snow of winter, by pulverising the soil, and imparting to it the atmospheric principles condusive to vegetation, fertilize it, and moreover destroy, by exposure to winter, that class of zoology which is so destructive to our crops, among which is numbered the caterpiller.

Nor do I call that land lying at rest, which is so overstocked with cattle as to be kept bare by their continual grazing. Here you encounter all the objections to a clean fallow without any of its advantages. The capacity of our lands to support advantageously any given number, should be carefully consulted.

The field having been permitted to rest one or two years, its soil is next submitted to a chemical analysis. It is consequently ascertained in what proportion, the four simple earths exist; an undue preponderance of either, fixes its character. Our lands are generally sandy, containing seven-eighths of sand; upon such soils, the practice of marling is of no modern discovery. The united testimonies of many centuries place its utility beyond all dispute. As a physician, when called to a patient, would not attempt to prescribe, from the fact of his being sick, without first ascertaining the nature of the disease; so would no good agriculturist, from the fact of land being poor, apply his manure, without first knowing the cause of its sterility. It may be, his land is not destitute of the essentials to fertility, but that it requires a sceptic or promoter of putrefaction to prepare these for food; what an error would he then commit, if he should apply the very material of which it is already too redundant, if he, for instance, should use *enriching* manures, when his land required *exciting*, or exciting manures when it needed enriching. If he should apply vegetable manure, when it required quick-lime or salt, or quick-lime or salt when

it needed vegetable. An acquaintance with the character of lands, is an indispensable pre-requisite to sure and profitable cultivation. Upon a sandy soil, I would use clay, and upon a clayey, I would bestow sand. The consistency of clay will give firmness to the sand, and the looseness of sand will break the tenacity of clay; when I had effected a proper admixture of the earths, I should find out whether was an excess or deficiency of the vegetable mould; if the former, I would remedy it by using quick-lime. The lime will act upon the unputrefied particles of the soil, and reduce them to a state in which they may be taken up by the radicles of the plant, when there is a deficiency, supply it by the composite manure; I have always been of the opinion, that salt is hurtful to most plants on a soil in which there is not a sufficiency of vegetable ingredient, and in this opinion, I am strengthened by the experiments of several able agricultural writers—that, it acts more as a condiment, than as a pabulum to plants. We are so much in the practice of using salt-mud indiscriminately upon our lands, it is important that we should know what office it performs in the economy of vegetation. If the mud is much impregnated with vegetable deposite, it may be used with comparative safety, but where, as it is most generally the case, it is two-thirds sand, it is then chiefly valuable for its saline property. The salt, like quick-lime, acts mechanically upon the vegetable properties of the soil, reducing them to a soluble state. When there is no longer any substance upon which to exert its caustic powers, it will attract the plant itself, and before we can be made sensible, by visible indications, of the injury it inflicts; the approach of winter puts an end to the experiment. The *yellow cast*, or as some call it, the *gradual decay* of the cotton plant, when manured alone with salt-mud, may be regarded as the incipient stage of its effects upon the plant. Salt-mud used in conjunction with vegetable or animal manure, is highly valuable, they are then the mutual counteractives of each other's unfriendly properties, and whilst the one gently stimulates the organs of the plant to greater activity, the other is in readiness to meet its demands. As cotton is the great staple growth of our community, the scheme of ameliorating crops as a means of improvement to our soils, is of course inapplicable to us, although I do strongly recommend to those planters, whose lands are of

an uniform character, to alternate their cotton and provision crops as far as it is practicable; its ameliorating tendency is, I think, indubitable.

Having given, then, a few imperfect hints upon the exhaustion of soils, and the means of resuscitating them, it remains for me, in conclusion, to say a few words by way of application. Since our last anniversary what have we done? What improvements have we made? What lands have we reclaimed or benefited or restored? When such questions are put, I blush to say that too many of us have cause to reproach our negligence—only, a brief survey of our island will present to our view a vast quantity of land lying idle, as if God and man had conspired to fix the curse of sterility upon it. Has our negligence induced us to assume this as a fact, or have we ever went properly to work, and tested it by labour, and upon the principles of unerring science? I fear, gentlemen, were this Society to put these questions frequently, it would find, that as much as it has already done, still it has left a vast amount undone. It rests with us to say, whether these waste places, such blots upon the fair and beauteous picture of thriving husbandry, are ever to remain inimical to the wants of man—or, whether they may not embowel certain materials, which only require proper information and management to render them productive. How is this to be ascertained? I unhesitatingly answer, by a due acquaintance with *agricultural chemistry.* Do not mistake me. I do not mean that we should all become professed chemists. But I do mean, that every gentleman who pretends to be a planter, should at least know the properties of that science, to cultivate which, is his daily care. I do not wish him to tell me the distinctive property of every mineral and soil—but I would have him at least understand those general and simple principles which go to produce, to sustain, and to destroy vegetable life—which tells the reason why, if you place certain plants upon certain soils, they will germinate and produce; and why, if you place them in other soils, they will wither and die; these elements of the science every man may acquire at his fireside, by his own reading. They are spread out in a simplified manner in almost every book of agriculture. An English philosopher has well said, "that whatever is worth doing at all, is worth doing well." Let us be admonished by the

advice, and let our endeavour be to make agriculture what it really deserves to be, not a mere thing of bodily occupation, but a science which is to engage the loftier attributes of mind—a science, which is to call forth our ingenuity, and to better the condition of our fellow beings. Let it not be said, that the life of the planter is one of uninterrupted toil, devoid of all rational interest and destitute of intellectual engagement. I am willing to allow that with some, the remark may be true; you may find here and there a planter who will take you over his fields, and point out, that such and such a plant grows here, without being able to assign the reason. To such a one, the science of agriculture is indeed a dull one—and the brute, who feeds upon the yearly products of the field, enjoys more of its pleasures than he does. But with the scientific planter, it is otherwise. He looks around him, and he sees scattered out, by the bountiful hand of nature, every thing to engage his practical, as well as theoretical efforts. The portraiture of the divine mind stands displayed before him, in all its noble attributes of wisdom, goodness and benevolence. He examines the plants of his creation, and in their living principle, their nutrition and growth, sees his matchless wisdom. He casts his eye over the beatiful earth, covered with the rich foliage of Spring, or loaded with the ripened fruits of Autumn, and his heart is filled with gratitude for his provident goodness. Every thing teaches him a leason. He analyzes the innumerable substances which compose the soil—he perceives their divisions and subdivisions, and stands amazed at the great directing hand, that could thus combine and arrange them. Confounded and humbled by such investigation, at the deficiency of his own mind—he raises his eye and it is caught by the vast vegetable tribe which enriches and beautifies the earth in every variety of form, fragrance and colour.

In addition to these indicative designs of Providence, we need not go to the inspired volume to discover another, we read it as well in the mouldering decays and empty thrashing-floors of the sluggard, as in the crowded barns and generous affluence of the industrious, it is this—"The earth shall yield nothing spontaneously—human industry and skill are the price of nature's bounty. She has presented

to us the earth, capable of improveability and productiveness, and in order that our diligence might be stimulated, and our ingenuity exercised, she has held back the fruits of spontaneous production, and made her gifts the reward of our labour and perseverance. So extensively at work is this law of nature, that as well upon the little litchen, which fastens itself upon the barren rock, as upon the majestic oak of our Western forest, the effects of cultivation are visible to every observer. It is said by botanists that the rose is the cultivated descendant of the common wild briar; that our plums are of the sloe, our peaches and nectarines of the common almond tree, and that our corn originally was in a state like grass, and in our day and under our cultivation, the beautiful and silky staple of our cotton is the improved successor of a coarse and less valuable material. And by geologists, it is said, that the sandy deserts and the denuded rock have, by the vegetable additions of successive generations, been converted from barrenness to fertility—that coral isles which have sprung from the caverns of the mighty deep, have, by the laws of nature, been carpeted with verdent beauty and richness; and, within the limit of our observation and superintendence, we have seen lands once so feeble as scarce able to cover their own nakedness, now teeming with vegetable luxuriance, and nobly rewarding the care and diligence which fostered and cherished them. Surely if such be the results of cultivation, such the productivity of the vegetable kingdom, such the improvibility of our earth, there is little cause for the dreaded anticipations of an overgrown population—there is little cause of consigning to eternal sterility any portion of nature's domain.

Let us then not despair—with every thing to encourage us, let us unitedly pursue an onward course; cheering one another through every difficulty—and lending our assistance, however feeble, in every emergency—and we have the full assurance of as well of God as of man, that come what will—"*prosperity must be our reward.*"

ART. XLI.—*Description of Corn Shuckings—loss occasioned thereby; by* THOMAS PARKER.

"Rocky Grove, Abbeville District, Dec. 20, 1833.

Dear Sir,—Throughout the upper parts of our State, it is very common for agriculturists to gather their entire crop of Indian corn, or all that one large field contains before they husk (or as it is commonly termed "shuck out") any part of it, and to have it all husked in one night, night being the time when this work is most commonly done. To effect this, a bright moon-light night is selected, and the neighbouring inhabitants, whites or blacks, sometimes both, are invited to give their assistance, and a substantial supper with a sufficiency of whiskey is prepared for the occasion. These "corn shuckings" are complete frolics. Two captains are chosen, who divide the company into two equal parties, when the pile of corn being as equally divided as possible by laying a fence rail or pole across the centre of the pile, one of which divisions is assigned to each party, the husking commences, each party trying to beat the other in the husking out of their division of the corn pile. The rustic songs which, by one party or the other, are constantly sung during this race, one person taking the lead in the song, but the end of every line, all joining in a chorus; the antic gestures and encouraging exhortations of the respective captains, or some one of each company peculiarly gifted to act such a part, who mounts the pile of corn which they are husking; the earnest exertions of the company generally, and of individuals in particular, who seem to husk as though the fate of the world hung upon the issue; the obstreperous but good natured jokes and brags played off by the winning party upon that which loses the race, all heightened by the exhilirating effects of the bottle occasionally passed round, produces a most inspiriting and animating effect even upon the looker on, and could not but move the most phlegmatic. The corn being nearly husked out the owner must conceal himself, for at the conclusion, if he is found (and a diligent search is made for him) at any moment previous to all hands being called to supper, the negroes will certainly exert the right which custom has given them of hoisting him on their shoulders, and moving in a body

three times round the dwelling house, making the air ring with one of their "corn songs," as they are called, and then by one of those "accidents done on purpose," drop him rather unceremoniously from their shoulders. Resistance is useless, nor will even a man's bed protect him if he is unmarried.

It is no wonder then that these "corn shuckings" are popular amongst the labouring class and frequent, but agriculturists are not, perhaps, aware of the loss occasioned by them, which it is the object of this communication to point out. I have but seldom indulged my negroes with them, under the conviction that instead of a saving of time and labour, it is in fact a loss of both and also of corn, independent of the expense of the supper; but I, this autumn, promised to grant them one, resolving to note well the result. Having done so, I caused the pile of husks to be examined the next day as they were put away, when I collected thereout better than two wagons loads of unhusked corn, which had either by accident or design, probably both, got mixed with the husks. There was also about two wagon loads of unhusked corn under the pile of husked corn. The picking out of this unhusked corn, husking it, carrying the corn into the crib and housing my husks occupied all my hands three entire days. This occasioned to me a loss of two days labour, for had I pursued my usual plan of gathering and husking my corn with my own hands alone, I would, by a calculation which could not deceive me, have done it in less time by that number of days; and the quantity of shattered corn left on the ground was so great, that my stock of hogs were several days in consuming it. I should also mention that one of our planters intending to remove to one of the new States, had a "corn shucking" this year, and sold his pile of husks as they stood on the ground to one of his neighbours. In removing these husks, the purchaser was induced from appearances to examine them, when he collected and husked out thirty-five bushels of clean corn, which was sold to him among the husks, and which corn was therefore an absolute gain to him and loss to the other. I have now only to state what course I pursue in gathering my corn crop.

When I commence, I give my negroes the following task. A half wagon load of corn to each full hand per

day, to be broke down, hauled to the crib, husked out, cribbed, and the husks carried away and housed. To do this, occupies them until 10 o'clock at night, but as this night work happens but at a particular season in the year, and does not last long, and is a work usually done at night, the negroes do it without a murmur. The corn thus husked, is thrown at once into the crib, (instead of being thrown on the ground in a pile and carried into the crib the next day as is done at these "corn shuckings") and the next morning the husks are removed and put into covered rail pens. On the first day, therefore, of gathering the corn no husks are put away, but on every succeeding day the husks of the previous day's gathering are put away as a part of that day's task. If, however, the corn field is at a considerable distance from the crib, so as from that or any other circumstance to occasion the consumption of much time in wagoning the corn home, this task would be too heavy.

Respectfully,

THOMAS PARKER.

ART. XLII.—*The wild or Candleberry Myrtle, a remedy against the depredations occasioned by the weevil; by Z.*

"April 7, 1834.

Dear Sir,—Information on all and any subject, connected with agricultural pursuits will, I presume, find admittance into your periodical, and although the notice may be of apparently small matters, yet to some one of your readers, it may be new, and let me add, valuable. I am induced to make these remarks from the inconvenience I suffered for many years, from the destruction of my corn by weevil, and the total absence of them now, in consequence of the application of a very simple remedy. The land which I plant in corn is low, and requires almost as

much draining, as the river lands, but is productive, and yields abundant crops. Whether it is owing to the location of the land, or other (to me) unknown causes, I am unable to say, but the fact is, that the corn is often taken from the field with a great many weevil in it. No injury seemed to result from their residence in it, while in the field, or during the cold weather, but as soon as the summer's sun had shed his genial warmth upon us, these intruders gave notice of their existence, by commencing the work of destruction. Upon several occasions my provisions were materially injured, and much complained of by the consumers—I tried a variety of remedies, without effect. Late planting, and early planting, were both suggested and tried; the land was all broken up deep in the winter, with a plough; the seed was coated with tar and soot, and finally was brought from one of the sea-islands at a distance and planted. The crops, I think, were improved by each of the remedies in quantity, but the enemy still retained his position, unmoved, and apparently immovable. I was one day mentioning the circumstance to a friend, who told me that he had understood, that the wild myrtle, *(Myrica cerifera)* was a sovereign remedy for this seemingly incurable disease. At this time the destruction had commenced, and the insects were to be seen in every direction; a quantity of myrtle was procured, and spread over the top of the corn, and directions given to follow it up, if any effect was visible. My removal to town for the summer, prevented my attending to the business any farther, and I learned upon inquiry in the fall, that "it *seemed* to check the weevil in some degree." This was not satisfactory, and as the corn in the field was apparently more than usually infested, I determined to give the experiment a fair trial. The corn-house was emptied, and swept, and washed with boiling water; the floor was then covered with myrtle; a layer of corn about a foot deep was then brought in, and then a layer of myrtle, and this management continued throughout the whole harvest, observing to cover the top of the corn with a bed of these little bushes. During the winter I several times examined the corn, near the door, and saw no weevil, yet I was fearful, that in the body of the house, the mischief might still be going on. Late in the spring we began to use the corn freely, and still found no weevil;

the crop was eventually consumed, and was to the last, entirely free from insects of all and every kind.

This was to me satisfactory, and the rule has been uniformly observed of strewing the house with myrtle, and no weevil have since been seen. My corn-house is divided into two bins, and an entry; and this year I had planted a small field alone, and desired that it might be kept separate. Into this entry it was thrown, and no myrtle was put with it, but the two bins were as usual well supplied. Upon my examining the corn-house, I found the corn in the entry filled with weevil, while that in the bins was perfectly free from all insects. The corn was immediately removed, and though filled with insects, was divided between the two bins, and myrtle plentifully strewed over the top of each. I am now eating the corn, and the weevil are no where to be found.

This last *accidental* experiment is more convincing than either of the others; here the two bins were free from weevil, and the corn which was separated from them, only by a loose board partition was filled, and I have little doubt, would have been rendered unfit for use before the summer was over. Perhaps, Mr. Editor, in giving you and your readers the information detailed in this paper, I have been carrying "coals to Newcastle;" if so, light your spirit lamp with it, and I shall be satisfied, as my only object is to do good and not to see myself in print.

With my best wishes for your restoration to health, and success in your pursuits, I remain your friend,

Z.

Art. XLIII.—*On Embankments and Freshets; by* A Planter.

"April 20, 1834.

Dear Sir,—I received two days ago your letter, requesting a communication on some agricultural subject, and as the late high freshet in our river, occupies at present most of my time and thoughts, in extricating myself from its effects, I will make it my subject and give you the best information I have, both as to the means of prevention, and where it cannot be prevented of lessening its effects.

To give an adequate idea of the powerful agent whose force we have to contend with, it may be necessary to look at the situation of our upper rivers. The Broad and Saluda uniting at the foot of their falls with some hundred feet of slope in them, and rising in a hilly country; the great length and size of the Catawba and the Yadkin, the former with an average width of three quarters of a mile of clear water, and a descent of upwards of 500 feet, must ever precipitate their waters into the rivers below their falls with great height and irresistible impetuosity, and such is the fact. Our freshets rise from 30 to 37 feet above the ordinary state of the river, and reach their height in about as many hours, and with a current at least ten miles the hour, (I speak from appearances only.) When the lands of the upper country were in a state of nature, the immense mass of leaves, wood, and other matters on the surface, absorbed and otherwise presented obstacles and delays to the passage of the rains into the rivers, and enabled them to run down their superabundant waters. The delay of a day in the passage to a stream of such rapid descent, must be equal to some feet of its height. Freshets are becoming more common from the expedition with which cultivated fields and waste lands precipitate their waters into the rivers. We have, therefore, nothing to hope for diminution of supply from above, nor can the straightening of the river so far as consistent with its navigation, ever be such means of passing it off below as to hope for a remedy from this source. The only means to be relied on then are substantial levees or

embankments, broad enough to resist the force of the waters, and high enough not to be overtopt by them.*

The foregoing observations are made to shew you the height, rapidity, and force of the powerful stream which you have to contend with, and which, as you cannot resist, you must give the "go by" to. The natural banks of the river can never carry its waters in a freshet, and the surplus water must have a passage, and perhaps, to near one half its volume in the river, and always keep in mind, that you can do no more than give it the "go by."

Your first consideration in deciding on an embankment, is to examine the width and lowness of the swamp about you, and see if there will be room after your bank is up for this surplus water. I should commence my embankment by giving a general margin of forty feet, more on a caving, and less on an increasing bank, and commence operations by a line of stakes on each outer edge, so as to include the ditch and all the ground that would be covered by the bank, and in this space the trees and bushes should all be grubbed up, though where the job was to be a heavy one, I would only cut them down close, and make a centre ditch round them. I would break up all the land within these stakes with bull-tongues or root-ploughs, by ploughing diagonally, or otherwise, until I made the ground as fine as I could. I would set a line of stakes for the centre ditch, and with shovel ploughs commence about four feet from them on one side, returning the same distauce on the other, the women and all the inferior hands with hoes drawing out the earth made by each cut of the plough, until from a foot to eighteen inches were drawn out, and then about the stumps or where there were roots, I put the spade-men to cutting the centre ditch below the roots. This being done your stakes should mark out the ditch which I prefer on the outside of the dam, and in no event to have a ditch on each side to be opposite each other. Your shovels leaving a small space on each side of the edge of the ditch run backwards and forwards in it, the hoes drawing out the earth, as before said. Your

* The highest bank I have seen was about 120 feet in base, and about 40 feet in height, and when that was broken, in the freshet of 1834, a cotton-tree upwards of three feet in diameter that crossed the breach, was snapt like a pipe-stem.

spade-men will find full employment in cutting roots about the stumps that may be in the ditch, or in the centre ditch, and in trimming the edges of the ditch after the ploughs are done.

This mode of preparing for and making a bank, finds employment for all your labourers, and puts the hard labour of digging up the earth on the mules, and is decidedly the quickest mode. If your ditches are to be under eight feet wide, the ploughs do not work conveniently. Where your bank is not above five feet high, you can get along very expeditiously, and neatly, with the spade alone in the ordinary way. Where you have sinks and low places that require a bank of ten or fifteen feet in height, I would grub the trees and centre ditch with the spade, and make as much of the bank as possible with the spade. Where the earth is beyond two tosses of the spade, and it has to be carried, banking is a tedious work and slow. The most expeditious carriage is the wheelbarrow rolling on planks, but for several reasons they will seldom be used. Light wooden bowls or trays, roughly made out of the black or tupeloe gum, *(Nissa aquatica)* where each one loads and carries his own tray, are the best means I know. Handbarrows carried by two persons, with a third to load, are convenient contrivances for idling away time. Tilt-carts and horse-scoops are very expeditious, but can be used only in particular places and to partial extent, though valuable as adjuncts to the other labour. On those special places where you have to carry your dirt, and are required to be very strong, I would lay the dirt on from side to side in such width as your base ought to receive, and so as to give each successive layer the most trampling. Earth thrown on at the top that it may roll down and make its own base, makes the dam too narrow, and when soaked through, will slip or "slab off" on the field side and open on the top and fall in, and most of our dams go in this way. I regard ramming the earth as useless work, water is the only agent to settle and compact the soil, and every freshet that does not break your dam strengthens it. Give your dams a broad base, and let them approach to the form of a half circle, though somewhat narrower and higher. Embankments when well made and above the danger of being overtopt, are often lost by leaks made by animals burrowing into them. Every prudent planter

should, during the rise and progress of a freshet, station his trusty men on certain portions of each dam, so as to include the whole, and watch them both night and day. So soon as a leak is discovered, notice whether it runs the water through of the same colour with the river water, for if so, it may be harmless in an old dam; but if it runs muddy or shows fresh earth, no time is to be lost, but cover it over with layers of bushes or canes, and throw the dirt on and so continue with layers of bushes and layers of dirt, until you arrest the leak; do not be discouraged by appearances, very formidable leaks are so stopt. All dams will weep, and especially new ones, and sometimes so much as to slip or "slab off" on its side next the field, these are to be filled with bushes and dirt as directed for a leak. When the freshet is gone, I would cut a ditch lengthwise with the dam on its outside, commencing on the slope, and going down to the hole and puddle it well; to puddle, is to have water enough with your earth to make it soft and work it well up with the feet and spade. It would be prudent when the crop is laid by in the summer to make the puddle walls in all parts of your dams, where you have reason to fear they have holes in them.

Your banks being all made, it is very desirable to coat them over with something to preserve them. The chain or joint grass is a good preservative, but there would be so much danger of getting this pest into your fields, that I have depended on coating over the bank with rich earth and planting the common cane. But after all these precautions the freshet may break your banks and inundate your corn and cotton. The means that may be used to make its effects the least injurious, shall be the subject of another letter.

A PLANTER.

PART II.

SELECTIONS.

Art. LI—*Culture of Sugar-Cane in Louisiana,*

[From the Manual on the Cultivation of the Sugar-Cane, and the Fabrication and Refinement of Sugar. Prepared under the direction of the Hon. Secretary of the Treasury, in compliance with a Resolution of the House of Representatives of January 25th, 1830,]

(Continued from page 319.)

A new method of clarification is offered, the present year, to the planters of Louisiana, by M. Guy Duplantier, of Baton Rouge. It is stated to possess considerable advantage over the ordinary process. So far as it is made known by the inventor, it consists in adding to the cane liquor in the grande a large dose of lime and subsequently, a certain portion of a substance whose name is not divulged, but whose properties are declared to be perfectly innocuous, inasmuch as it is asserted to be of frequent use in families in connexion with food. The sugar produced by this process is certainly better grained, drier and of a lighter colour than that manufactured on the old plan, although it still retains a yellow tinge and possesses an alkaline odor. One or two crops have been fabricated upon this plan; and have commanded a higher price, by about one cent on the pound, than the ordinary sugar of the country. Its advantages are offered to planters by the proprietor of the discovery for the sum of $1 50 on each hogshead of sugar made after this method.

Evaporation.—By evaporation is meant the dissipation of the water of solution by heat. The quantity to be evaporated varies with the ripeness of the cane. In seasons when it reaches maturity, it constitutes between 70 and 80 per cent. of the juice; and on the other hand when from the early access of frosts, or the unusual prevalence of wet weather, it is not allowed to ripen, it rises to from 85 to 90 per cent.

An instrument called the Saccharometor, or Hydrometer of Baumé, is frequently used, in order to learn the saccharine richness of cane liquor. It consists of an hermetically sealed tube, enlarged into a ball at one extremity, and loaded with shot sufficiently to give it an upright position when placed in any fluid.

The stem contains a coiled paper, upon which the degrees are marked. Or it is made of brass, with the degrees engraved directly upon the stem. Beginning at the top of the stem it is graduated from 1 down to 34°, this being the point at which it stands in a solution consisting of five parts of sugar and three of water at 82 of F.

Cane liquor in Louisiana varies between 7° and 9° of this instrument, although it is often boiled when no higher than 60°; and very rarely it has been known mounting as high as 10 and 11°.

The saccharometer is not, however, regarded as affording a sure criterion of the proportion of sugar in cane juice:—the preponderance of gum and green fecula in some cane liquors being so great as materially to influence their specific gravity; still its use is attended with very important advantage in arriving at an approximative idea of the saccharine matter.

The kettles have been described in the account given of defecation. The juice is ladled forward by means of wooden buckets, holding from five to eight gallons. They are furnished with wooden handles nine or ten feet long, which are inserted at one end into the bucket across its top; the middle of the handle moving in a crochet (like an oar) inserted into a timber running along in front of the kettles. The crochet is placed half way between the central point of the kettle to be emptied, and the top of the saddle which divides it from the kettle destined to receive its contents. It requires two men to handle one of these dippers; but such is the facility of using the apparatus, that by its means, the battery is discharged and all the kettles scooped forwards in fifteen minutes.

The furnace is maintained at a uniform heat, day and night, from the commencement of the grinding season in November, till its conclusion in January, stopping only a few times to scrape from the kettles the accumulation of rust, lime and earthy impurities which collect upon them, and which, if not occasionally removed, cause them to crack.

One set of kettles, only, is in use at a time, unless it be on those estates where the crop is to be ground exceeds 200 acres. The quantity of wood required to keep the engine in motion for grinding the canes and for supplying the furnace for the kettles, varies from twelve to sixteen cords per day, although with bad cane-juice it sometimes amounts to twenty cords. The kinds of wood used are, ash, maple, cyprus, gum and laurel.

During the the evaporation, all the kettles are maintained in ebullition, with the exception of the grande; the foam and bubbles usually mounting up to within an inch or two of the tops of the saddles. When the syrup or battery is likely to boil over, they are kept down by frequent blows with the paddles. The time required to bring a charge of the grande to the chrystalliz-

ing point, varies from one hour to two, depending upon the setting of the kettles and the richness of the juice.

The transferring of the syrup is not performed at once. The three kettles which are hottest requiring to be kept filled, two or three buckets of juice are, from time to time, ladled forward to effect this object.

To determine whether the syrup has attained the proper consistency for granulating, or for being *struck*, as it is usually termed, a large copper spoon, attached to a long wooden handle, is thrust into the battery and lifted into the air over the kettle: if the syrup is so thick that it covers the spoon in a thick pellicle, and drains from it slowly, presenting at the same time a grained appearance, from the little bubbles of air and aqueous vapour it contains, it is considered as sufficiently cooked; and it is instantly discharged by the bucket into an adjoining reservoir, from which it flows by channels to the coolers for granulation.

Another method of judging of the proper degree of concentration is to place the thumb upon the edge of the spoon, freshly taken from the battery, which occasions the removal of a drop of the syrup: this is drawn out into a thread by means of the forefinger. If the thread breaks dry and rises in a spiral form, the boiling is good.

Within a few years, a slight modification of the foregoing plan of evaporation has been introduced into Louisiana. It consists in the use of the *Bascule pan* of the French, invented by M. Guillon, and known also to American refiners by the name of the *tilt pan.* It is a copper vessel, mounted over a separate furnace.

In using this pan, the juice is evaporated in the kettles as before, but is struck between 25 and 28° of the Hydrometer of Baumé into a large cistern capable of containing at least four or five hogsheads, where it cools, and deposits a thick sediment. From this reservoir, it is pumped up, from time to time, into a smaller one situated just above the bascule pan. The operation with this apparatus is as follows: The gate attached to the reservoir of syrup is raised and the bottom of the pan covered to the depth of four inches. A brisk fire being kindled under it, boiling soon commences: a slight scum rises, which flows down into the lip, whence it is removed by means of a hand skimmer. The striking point is ascertained as in the kettles, except that a thermometer is often made use of to learn its approach. When struck, the thermometer stands from 236 to 238°.

To assuage excessive ebullition, it is customary to throw in a small piece of lard or of butter, just previous to the completion of the cooking; and at the moment of decanting the charge, notice is given to the fireman, who closes the ash-pit door to prevent the flames from rushing up into the boiling apartment to the inconvenience of the the operator, who is stationed upon the rim of the furnace by the side of the pan. Immediately on its being

discharged, it is suffered to fall back to its place, and the gate to the reservoirs is lifted as soon as possible, in order to cover the bottom of the pan before it becomes too hot from the action of the flame.

The time required to perform the operation varies from twenty to thirty minutes, and the result is a hightly improved sugar, with the estimated gain of one hogshead in fourteen over the old mehod.

Granulation.—This part of the process is effected by running off the battery into shallow wooden vats, situated in a line with the kettles at the extremity of the house, opposite to that occupied by the cane mill. These vats are made of cypress plank, and measure from six to seven feet in length, from four to five feet in width, by twelve to fourteen inches in depth. Not less than six of these are used with one set of kettles; and in general a sugar-house contains eight or ten, and sometimes a still greater number. A single strike covers the bottom, or forms a layer in one of these coolers from two and a half to three inches deep. Immediately after the first charge has been run into a cooler, it is thoroughly stirred with a wooden oar or spatula, in order to render the syrup uniformly consistent—the last portions from the battery being more dense than the first. As soon as a thin crust of crystals forms at the surface, a second stirring is given with a view to disseminate the crystals equally through the fluid mass. A second charge is not introduced until the first has become thoroughly granulated and hardened so as to give it support, without mingling the two together. This requires a period from six to to fourteen hours, varying with the quality of the juice and the dryness of the atmosphere. The second charge is stirred like the first. In this way four batteries are struck into each cooler.

It sometimes happens that a skip which is not sufficiently cooked, comes to the cooler; in this case, granulation does not take place, and the defect is remedied, in some measure, by mingling with it, as soon as possible, a charge which is over cooked, or boiled higher than usual.

The effect of underliming also, is readily perceived when the syrup reaches the cooler, by the appearance of a white, glutinous froth upon its surface. This, in like manner, is remedied by adding to the next skip, just previous to striking, a small quantity of lime water; and on its arrival at the cooler, stirring the two skips intimately together.

Potting.—This is the concluding operation in sugar making. It consists in the removal of the sugar from the coolers to the hogsheads in the draining house. It will be necessary, in the first place, to describe the draining house. In some sugar houses it consists of a long room from forty to sixty feet in length, forming an extension of the main building, in a line with it, and contiguous to the space devoted to the coolers, from which, however, it

is separated by a partition. In others, it forms an apartment similar in extent, but instead of being placed in a line with the main building, it is situated at right angles to it. But more generally the modern sugar houses are provided with two small draining rooms, both at right angles to the central building, and connected with it by doors contiguous to the space occupied by the coolers. The apartment is duly lighted by windows, and well provided with double doors, opposite each other, in order to favour ventilation. The floor consists simply of scantling, running crosswise, eighteen inches apart; beneath which are situated the molasses cisterns, each covering an area of not far from twenty square feet. The depth is sixteen or twenty inches; and they are either made of brick and plastered with Roman cement, or of two and a half inch cypress plank, and rendered tight by caulking and pitching: the latter construction is the most common.

The empty hogsheads are arranged upon their bottoms over these cisterns, upon the scantling with their joints left considerably open, and having three or four auger holes in the lower head, which are closed by sugar canes on the inside—the upper ends of the canes reaching nearly to the top of the hogshead.

After the granulation of the last skip of a cooler, it is usual to dig a conical hole in the contents of the vat, about a foot and a half across at top, in order to collect a portion of the molasses previous to the potting. In a little time the hole is partly filled with molasses, which is scooped out and carried to the molasses cistern in the draining house. This preliminary process, (not always practised,) is called *bleeding*. In some sugar houses the same thing is accomplished by having two plugs in the bottom of the vats, of about two inches in diameter, which comes up through the sugar. These plugs being drawn, the molasses flows out through channels under the coolers, and is conducted into a general reservoir, from which it is transferred to the draining house. Still another method is, to have two holes through the sides of each cooler, even with the bottom, into which are thrust iron rods extending across the cooler, by which orifices are made for the draining of the molasses, and the coolers being inclined forward, its uncrystallized syrop flows out, and is caught in buckets.

The quantity obtained, however, by these methods, is very small, compared with what afterwards drains from the sugar in the hogshead. It rarely exceeds eight or ten gallons to a cooler. In many instances, bleeding is altogether omitted, especially when the weather is cool, as the molasses is then of service to the sugar, by enabling it to retain, for a sufficient length of time, that degree of heat which is requisite for its most effectual drainage.

The temperature at which the draining is performed, does not vary much from 98° or blood heat. When the weather is cold, however, it is potted rather warmer. It is spaded up from the

cooler in thin slices, by an iron shovel, and carried in small tubs to the hogsheads. These, when filled, are usually covered with a broad cover. The house is kept as warm as possible, by not opening the doors and windows, unless in warm and dry days. A few draining houses are furnished with stoves: in them the temperature is constantly kept at 80° F.

When the sugar has drained, so as to feel somewhat firm, in order to give a free vent to the molasses, the canes are sometimes started a little from the holes into which they have been thrust, and after one or two days they are usually withdrawn altogether.

The average quantity of molasses which drains from each hogshead, is from forty to forty-five gallons. The draining is completed in, from twenty to thirty days; after which, the hogsheads are filled up from one another, and are then ready for shipment.

On draining off the molasses cisterns, a greater or less deposit of sugar, called *cistern bottoms*, is found in these vessels. They vary, from three to five hogsheads, for every hundred hogsheads of molasses. It is either transferred to the kettles, boiled with lime water and evaporated as before, or sold to sugar refiners in the condition in which it comes from the cisterns.

(To be continued.)

ART. XLV.—*On the Use of Marine Manures; by* WILLOUGHBY NEWTON.

[FROM THE FARMERS' REGISTER.]

It has often been to me a subject of surprise, that the various substances abounding on the shores of the Chesapeake and its tributaries, and which, for the want of a generic name, I shall class under the general head of *marine manures*, have attracted so little attention in Virginia. Whilst our more enterprising and industrious neighbours of Maryland, have by the liberal use of these means, been converting a barren and exhausted soil into fertile and productive fields, the farmers of Eastern-Virginia, with the most abundant resources within their reach, seem to have been almost entirely ignorant of their value, or indifferent about their application. I deem it not amiss, therefore, to call the attention

of the farmers on tidewater to the value of these resources, by communicating for your Register, though in a hasty and imperfect manner, my experiments and reflections on this interesting subject.

Under the head of *marine manures*, I shall embrace, in the order of their respective values, sea weed, *(Alga Marina,)* or sea ware, as it is called on the Eastern Shore of Maryland; Indian bank shells, oyster shell lime, and marsh mud.

About two years ago, finding it utterly vain to improve a large and exhausted farm, by the unaided resources of the stable and farm yard, I determined to look out for some other means of improvement. I accordingly commenced, on my Potomac farm, vigorous and extensive operations, with the marine manures of which I have spoken. I committed a fatal error however, at the outset, in adhering to the ruinous three shift system, without the aid of artificial grasses; upon which, I verily believe, no great or permanent improvement can be effected, with any thing short of a mountain of stable manure, and hands and teams without limit, to apply it. It is true, that upon this system, by great attention, and the regular application of all the fertilizing means within the reach of our tidewater farms, crops may be considerably increased, and the land gradually improved: but let this great attention be in the least remitted, and the diminished returns of the farm will soon demonstrate the deterioration of the land. I have since adopted the four field rotation, with a standing pasture, and the extensive cultivation of clover; and I have no doubt I shall soon reap the reward of my labour, in the increase of my crops, and the permanent improvement of my land.

I soon found in the application of manures, that no great reliance could be placed on the occasional services of the farm hands and teams. I therefore detailed for that exclusive purpose a regular force, consisting of a man, a woman, and two small boys just large enough to follow the carts, with two carts properly constructed, and an abundant supply of oxen. With this force exclusively devoted to collecting and carting out manure, I applied during the last year, upwards of 5,000 loads. The whole annual expense, including estimated wages, wear and tear of the carts, &c. may be fairly set down at $250, making the manure cost about *five cents* a load. Yet few of our farmers can be convinced that they can *spare* time and labour for this essential operation.

My farm bordering more than a mile on the Potomac, affords a fine opportunity of collecting the *sea weed;* and my principal and most successful experiments have been with this valuable manure. For nine months in the year, from the 1st of August to the 1st of May, it is in great abundance, and my carts have usually carried out, according to circumstances, from 15 to 30 loads a day. During the last year I applied to various crops about 3000 loads of this manure, and with great effect upon all. My first experiment

was with corn. I applied it at the rate of about 70 loads to the acre, in the water furrows of a field intended for corn the next year, and *listed* upon it. The effect on the corn was immediate and powerful, doubling, I am confident, the crop on the poorest and lightest parts of the field, and greatly improving it wherever applied. I next applied it on a piece of very poor land, at the same rate, and fallowed for wheat, leaving in the middle of the lot a space of two acres, unmanured, which had previously been sowed, as an experiment, with cow-peas. The whole was put in wheat during the first week in September, 1832. The wheat on the manured land grew off beautifully, leaving far behind that on the other part of the lot. At Christmas it was exceedingly promising, but unfortunately having been sowed too early, the fly in the spring nearly destroyed it. During the same fall, I applied the *sea weed* as a top dressing to the poorest parts of my wheat and corn land; and in parts of the field I had it ploughed in with the wheat. Both applications produced most decided effects, the growth of wheat being thick and luxuriaut on land which before this manuring was not considered capable of producing wheat at all. The fatal mildew, however, of the last summer, greatly injured the crop, although it did not affect those portions of the field by any means as much, as other parts to which this manure had not been applied.

My next experiment was with oats, on which the effect of this manure was truly astonishing. I selected the poorest knoll in my field, bordering upon a small stream, along the side of which was a strip of land considered rich. I gave a liberal dressing to the knoll, and left the bottom unmanured, and fallowed during the winter for oats, which were sowed in March at the rate of two bushels to the acre. When I prepared this piece of land for oats, an intelligent neighbour and friend of mine remarked to me, that if I succeeded in getting a crop from it, he would never afterwards doubt the efficacy of *sea weed.*

We visited the farm together shortly before harvest, and he expressed the greatest astonishment at the growth of the oats. The line was distinctly visible which marked the extent of the manuring; the oats on the poor knoll being from 6 to 12 inches higher than those on the rich bottom. I verily believe I do not exaggerate, when I say that the oats were higher than *some* of the corn stalks of the crop preceding the manuring. I tried this manure also as a top dressing for oats, followed by clover, with decided benefit on both crops. Its great efficacy in counteracting the effects of drought is very remarkable, and was strikingly exhibited in my field of corn during the excessive drought of last summer. The parts manured with *sea weed* continued green, long after the rest of the field had faded, and produced a tolerable crop, notwithstanding the great severity of the drought. I am now making an application of it, the operation of which I have

yet to test. I am top-dressing a field of clover sowed last spring, that I design to fallow for wheat next summer. I have been informed by an intelligent gentleman who witnessed the experiment in New-Jersey, that good farmers in that State purchase this manure on the sea cost at 25 cents a load, and after carting it several miles into the interior, apply it with profit to their grass lands. I have little doubt that my experiment will be successful.

In an admirable treatise on agriculture in the New Edinburgh Encyclopædia,* (to which, if it has not already attracted your notice, I would beg leave to direct you attention, as furnishing many valuable extracts for your Register,) the opinion is expressed, that "in one respect *sea weed* is preferable to the richest dung, because it does not produce such a quantity of weeds." I do not know whether its effect will be so permanent or not, but for a single crop, I hazard nothing in saying that in sufficient quantity it is equal to the best stable manure.

The wonderful effects of this manure are not to be attributed so much to the vegetable matter which it contains, as to the quantity of salts and animal mucilage intermixed with it. It is doubtless this animal matter (consisting of sea nettles, young shell fish, and the spawn and *fæces* of the finny tribe,) that produces so stricking an effect on wheat on light lands. According to the writer in the Encyclopædia to whom I have referred, it has produced a wonderful effect on the sea coast of England, imparting to light lands sufficient tenacity to produce wheat and resist *mildew*. I do not know what this manure would yield on analysis; but I think it probable a quantity of *gluten* mould be afforded, which is essential to the growth of wheat; and this may account for the remarkable fact observed both here and in England, that it imparts to the lightest soils the capacity to bear heavy crops of wheat. You may find in the first vol. of the American Farmer, an interesting letter from Thomas Griffin, Esq. of Yorktown; and in the 13th vol. of the same work, a valuable communication from an Eastern Shore farmer, signed "Corn Planter," on the great virtues of this manure: the republication of these papers might possibly be of service by rousing the attention of some of our lethargic farmers, to the inestimable value of an article, heretofore regarded by them as a nuisance, being suffered to remain fermenting and putrefying on the shores, and infecting the atmosphere with the most fœtid and pestilential odors.

Most of the farms on the Potomac abound with banks of partially decomposed oyster shells, whether left there by the Indians,

* By Robert Brown of Markle, (Scotland,) who was a judicious and successful practical farmer on a large scale, as well as an excellent writer on agriculture in general—two characters which unfortunately, are seldom found combined in the same person.—*Ed. Far. Reg.*

or brought to the surface by some great convulsion of nature, from the former bed of the river, I leave to geologists to determine. I have used these shells in considerable quantity, and with very manifest advantage. They do not act so promptly or so powerfully as the *sea weed*, but are probably more permanent in their effects. In combination with *sea weed* and other putrescent manures, they have all the effects of marl in giving permanency to the improvement. The late Mr. Ellyson Currie of Lancaster, who was the most zealous farmer of my acquaintance, used these shells very extensively; and whenever I met with him, he expatiated with delight and enthusiasm on the great benefit derived from them. He used, them, however, without a sufficient attention to artificial grasses, and probably without the application of a due portion of putrescent manures; and the consequence has been, as I have been informed since his death, that parts of his farm, now exhibit the appearances invariably produced by an overdose of calcareous matter, without a due application of putrescent and vegetable manures.

The value of oyster shell lime as a manure is so generally understood, and has lately been so well attested by the successful practices of Mr. Lewis of Wyanoke, and other contributors to your Register, that I deem it unnecessary to say much on that subject. I have applied it to some extent, and with obvious advantage to wheat and clover; but having a great abundance of other materials much more accessible, I have not yet devoted much attention to lime. I am now, however, about to burn a quantity of shells, with the view of making a compost of old corn cobs, marsh mud, stable manure and lime, hoping in this way to derive some advantage from the corn cobs, which heretofore I have found it almost impossible to reduce to the food of plants. Under ordinary circumstances, I do not approve of expensive composts; but having all the necessary materials at hand, I shall form my compost during wet weather, when the fields will not bear carting over them, and when my manuring force could not be profitably employed about any thing else. In this way it will cost but little.

I have made some experiments with *marsh mud*, which at first promised to be very successful, but I must coufess that my expectations have been somewhat disappointed. To apply it, requires more labour, and that of a very disagreeable kind, than either bank shells or sea weeds; and in my hands it has proved less efficacious than either of them. It is possible that I have committed some error in appling it, as I have been assured by a gentleman of high respectability, from the Eastern Shore of Virginia, who had used it extensively, that he would not exchange it, load for load, for the best stable manure. I entertain no doubt, that when better materials are not to be had, it may be used with very great advantage.

The beds of fossil shells, in this country, denominated *marl*, may possibly be considered as belonging to the class of *marine manures*; as in all probability they are of marine origin. But the period of their connexion with the sea is so remote, and the means by which they were transferred to their present positions, so indistinctly "known to our philosophy," that I have not thought proper to class them under this category. It is not however, foreign to the purpose of this essay to say a few words on this interesting subject.

Your *Essay on Calcareous Manures*, and the articles in the Register on that subject, have excited great interest in the Northern Neck, as well as in other parts of the State. The subject is discussed in almost every company, and some of our practical farmers are already applying marl, and many others are in search of it. It is a very fortunate, and seemingly providential circumstance, that as soon as we leave the flat lands of the rivers and creeks, and come into the forest where *marine manures* are not to be had, marl is found in abundance. I have now in my possession several specimens, some of them uncommonly rich, found since the publication of your book, in different parts of the Northern Neck. You have just cause to be proud of having conferred so great and lasting a benefit on your country.

I cannot close this long, and I fear todious communication, without expressing the confident opinion, that the cultivation of artificial grasses, particularly clover, is absolutely necessary to secure the full benefit of any system of manuring. I fully concur with your correspondent Mr. Archer, of Fort Monroe, that in Eastern Virginia we have committed a great error, in supposing that our lands will not produce artificial grassess to advantage. My limited experience and observation entirely confirm the view so well expressed by him. It may be safely affirmed that there is not on the face of the globe, (possibly with the exception of China) a highly improved and well cultivated country, in which artificial grasses are neglected. If China be an exception, the peculiar condition of that country, will afford the best reasons for the practices there adopted, whilst it should teach us the impossibility of following the example.

Whilst on the subject of grasses, I will inquire if the question, whether plaster will act in the vicinity of salt water, has yet been satisfactorily settled by the experience of practical farmers? I design to make some experiments with it in the spring, and may possibly send you the result of my observations.*

* We have no experimental knowledge of gypsum acting near salt water, but have fully proved its efficacy on soils *after* marling, on which *before*, that manure was totally worthless; and its inertness even near fresh tidewater, has been generally attributed to the sea air. If our correspondent will try gypsum on clover where he has already applied his oyster bank manure in abundance—or if he can cause the like experiment to be made on some of the land injured by Mr. Currie's excessively heavy dressing, we entertain but little doubt of his success.—*Ed. Far. Reg.*

I hope, Sir, that you will receive this communication as an earnest of the zeal with which I desire to co-operate in the noble cause of agricultural improvement. I should be happy if I could bring to your service, any thing calculated to give effect to your labours. But I am well convinced, that neither my skill nor success as an agriculturist, give me the slightest claims to the confidence of the public as a teacher of the science.

WILLOUGHBY NEWTON.

Westmoreland Co., Va. Dec. 16, 1833.

ART. XLVI.—*On the Management of Negroes—addressed to the Farmers and Planters of Virginia; by* H. C.

[FROM THE FARMER'S REGISTER.]

The management of our slaves is a subject of some little difficulty, but which difficulty may be overcome by a judicious system, (where there are no foreign causes operating to prevent it, which foreign causes I may hereafter speak of.)

I consider our Virginia negroes as forming a most valuable class. They have some of the best traits of character of any people on the globe. For instance, they are more generally good tempered than other people—they are kind towards each other, and are almost universally good hearted: they are generally grateful for favours, have the strongest local attachments, endure fatigue and hardships with great patience, are very contented, and cheerful—and in fact, are the happiest people in the world, unless tampered with by fanatics. With all these good qualities they have as few faults as most people, and it only requires system and some little management to make them valuable as a class of laborers, and contented and happy among themselves. In the management of negroes there should always be perfect uniformity of conduct towards them; that is, you should not be two rigid in your discipline at one time and too lax at another. They should understand that real faults will not go unpunished; but at the same time, moderate punishment, with a certainty of its succeeding a fault, is much more efficient in producing good conduct than severe punishment irregularly inflicted—that is, sometimes inflicted for an offence, and at others omitted, when the same or a worse is committed: for the ill-disposed will always risk the

chances of escaping punishment altogether. It is the certainty of punishment, and not its severity, which deters from misconduct: and in fact, after awhile, on a well regulated plantation, that certainty will prevent the necessity of inflicting punishments almost entirely. The best evidence of the good management of slaves, is the keeping up good discipline with little or no punishment. The next thing to uniformity of conduct towards slaves, is the impartiality of treatment to be used towards them all, unless for particular good conduct, and then it should be understood as such. Rewards should also be made a part of the system, whenever there is displayed particular good conduct; and praise now and then judiciously used, goes a great way in their management. I have known a very lazy fellow who had been frequently punished for laziness without the least effect, spurred up, and made one of the most industrious fellows on the plantation, by a little praise. One day this lazy fellow was seen to be rather brisker at his work than usual for *him*, though by no means very brisk; however, I thought I would try what effect praise would have upon him, and in riding by him said, "well Joe, you are improving; you are getting along quite fast." Joe, with a smile, said, "do you think so master?" and moved on a little faster. The next day or two, when I saw him again, I said, "why, really Joe, you are doing quite well; you are getting to be quite smart with your work." "I am glad of it master," said Joe, with cheerful face, and a much more active step than I ever saw him have before. In five or six days after that, when I went where Joe was, I found him ahead of all the other hands. "Well Joe, you have got ahead of them?" "Yes master, and I mean to keep there too;" but it was too hard a tug for Joe to smile this time. However, we have never had cause to find fault with him since, about his laziness. A few kind words will often go a great way. I would recommend to my friends, the Virginia overseers, to use a little flattery sometimes instead of stripes. In the management of slaves, the temper and disposition of each negro should be particularly consulted. Some require spurring up, some coaxing, some flattering, and others nothing but good words. When an overseer first goes upon a plantation to live, he should study their dispositions well, before he exerts too much rigor. Many a noble spirit has been broken down by injudicious management, and many a lazy cunning fellow has escaped, and put his work on the shoulders of the industrious. Give me a high spirited and even a high tempered negro, full of pride, for easy and comfortable management. Your slow sulky negro, although he may have an even temper, is *the devil* to manage.

The negro women are all harder to manage than the men. The only way to get along with them is by kind words and flattery. If you want to cure a sloven, give her something nice occasionally to wear, and praise her up to skies whenever she has on any thing tolerably decent. In the management of negroes it

is particularly necessary to elevate their notions of honesty and character as much as possible, and never to charge them with dishonesty unless you have positive proof of the fact. You should not be too suspicious of them. A negro girl, who was under my first overseer's wife, could not be trusted at all, and was charged with many thefts. On changing overseers, the wife of the next missed something, and it was suggested to her by some of the other negroes that this girl was the thief; but the overseer's wife being more unsuspicious than most persons, said she could not believe that a girl of her good countenance could have committed a theft; and that very speech, I believe, together with her mild and unsuspicious conduct towards her, cured the girl; for she has borne a good character ever since.

Never put temptations in their way, by leaving keys or money carelessly about. Many a negro who would never have committed a theft in the course of a long life, with a careful overseer or master, has not been able to resist the temptation, when a careless overseer or master has left keys lying about; and when once the ice is broken and they lose character, they soon become hardened in villainy. It would be better to give up the keys to the negroes and trust to their honesty (many of them are trust worthy,) than to leave them carelessly within their power; for they feel a kind of pride when trusted, which might possibly make them go straight, when this manner of tempting would be sure to make them dishonest. The proper course is to put no temptation whatever in their way.

Too much familiarity with negroes ought never to be indulged in by the master or overseer, as it causes them to lose the proper respect for them. But kind words may be used whenever they deserve them, without being too familiar with them. The master and overseer should always pull the same end of the rope. Negroes soon discover any little jarring between the master and overseer, and are sure to take advantage of it. The overseer should always coincide with his employer, and carry all his views fully into effect; and both should go on harmoniously together, and that alone will make the management of the slaves much more easy. No overseer, however high his standing, should hesitate to obey implicitly the orders of his employer; for how can he require those under him to obey him, unless he obeys those over him? The first duty of those who expect to command, is to learn to obey.

Harmony among neighbours is very important in the successful management of slaves. If all the farmers in the same neighbourhood had the same system of managing their slaves, and would unite in suppressing vice among them, and in keeping up a proper system of discipline, it would render their management much more easy, and render the slaves much more contented and hap-

py. A good disciplinarian in the midst of bad managers of slaves cannot do much, and without discipline, there cannot be profit to the master, or comfort to the slaves. Discipline is just as necessary on a plantation, as in the navy or army.

It is all important for the morals as well as the comfort of the slaves, (to say nothing of the policy and humanity of the thing,) that they should be well clothed and fed; for they will steal if they are not well fed, and the very best remedy for hog stealing is to give the rogues a plenty of pork to eat. Negroes should have some of the luxuries of life too, such as fowls, eggs, &c. with which to buy coffee and sugar, a garden and fruit trees, all of which will save the master's fowls, fruit, &c. and aid in the facility of managing the slaves, and will serve to attach them to their homes.

The greatest bar to good discipline in Virginia, is the number of grog shops in every farmer's neighbourhood, and which ought to be put down by our Legislature.

The melioration of the condition of the slaves in Virginia is very perceptible even within my time, that is, in the last sixteen or seventeen years, and will go on progressively with the improvement in agriculture. They are better fed and clothed, and less severity used towards them. In fact, there is no such thing as severity now towards slaves in any part of the State that I am acquainted with, and there never will be any occasion for it again, if the fanatics will only let us alone; and there are fanatics south as well as north.

H. C.

Art. LIV.—*Soiling, its Origin and Advantages.*

[FROM THE GENESEE FARMER.]

The feeding of cattle,* in stalls or other suitable places, during the growing season, with grass cut and carried to them, is a practice denominated soiling of cattle; and prevails extensively in Great-Britain and some parts of the United States.

* In agricultural science, the general name of cattle is given to all tame animals which are fed in pastures, and the term neat cattle, is used to distinguish the low kind from others.

This practice, like many others, which have led to important discoveries and improvements in the science of agriculture, must have probably originated from the necessities of those who occupied but small tracts of land, and who needed the produce of more stock than could be sustained from common pasture, as it is generally improved. This practice, cannot, therefore, be recommended to that class of farmers, which perhaps are the most numerous in this country, who possess considerable tracts of land, which can hardly be rendered suitable for any purpose but pasturage; or to that class, who, without the greatest regard to the nett profits, would rather indulge a disposition to consult their ease in their modes of cultivation: but to that class whose farms are small, and who are stimulated by the laudable ambition of improving a little land highly cultivated, rather than a great farm badly managed; and to that class also whose whole farms are capable of being either tilled or mown; particularly, when their condition is such that they cannot procure manures.

The advantages to be derived from soiling, have been recommended by some very celebrated authors, and other eminent farmers of Great-Britain.

Dr. Thaer, physician to the Electorial Court of Hanover, in a communication to the English Board of Agriculture, lays down the following as facts which are incontrovertable as the result of the experience of the Baron de Bulan and others: "That a spot of ground, which, when pastured, will yield only sufficient food for one head, will abundantly maintain four when kept in the stable.

"Soiling affords at least double the quantity of manure from the same number of cattle; for the best manure is produced in the stable, and carried to the fields at the most proper period of its fermentation; whereas when spread on the meadow, and exhausted by the air and sun, its power is entirely wasted.

"Cows which are accustomed to soiling, will yield much more milk when kept in this manner: and fattening cattle will increase much faster in weight.

"They are less subject to accidents and diseases; they are protected from the flies, which torment them in the fields during warm weather; and they do not suffer from the heat of summer."

As it respects the quantity of land saved by soiling, it must in some measure, depend on the nature of the soil, and the condition of the land appropriated for that purpose. All the writers on this subject, as well as many other practical farmers, appear to be well agreed in this one point, that a given quantity of land may be made to sustain many more cattle, and to keep them better, by soiling than by pasturing them. The great question is, whether economy on land and saving of manure is a sufficient compensation for the extra labour.

There can be no doubt but that the practice of soiling would be very profitable to those who would derive the greatest profit from a small tract of land; and many who practice it upon a large scale, think it good husbandy.

Art. LV.—*On the Management of Hay; by* A. Z.

[FROM THE EDINBURGH FARMER'S MAGAZINE.]

To the Conductors of the Farmer's Magazine.

Gentlemen,—If you think the following observations on the management of *hay* deserving of notice, they may be inserted in your next number,

The treatment of *hay* is a subject of high importance to the agricultural interest of Britain, not only as a valuable article of produce, but as constituting a bulky and essential part of the food of our domestic animals, upon which their health and usefulness in a great measure depend,

Where such a valuable interest is at stake, we might naturally expect to see experiments made, and a suitable degree of attention paid, to form a regular system of management. It is much to be regretted, that in many parts of the island, no such attention has been paid; and the treatment, especially in many parts of North Britain, is slovenly in the extreme, and very ill calculated to secure and preserve, in the highest degree of perfection, that flavour, and those nourishing qualities, without which, neither hay, nor indeed any description of herbage, can be valuable.

The first consideration in the treatment of hay, is, the period at which it should be cut, and the weather most proper for that operation. The time most proper for cutting the different kinds of grain, together with every step of the after-management, are points well understood, and for the most part strictly observed; every farmer being sensible, that any neglect of, or deviation from these rules, will, by impairing the quality both of the grain and straw, be productive of much trouble and loss to himself. It is somewhat surprising, that the same kind of reasoning should not have been applied to the management of hay; as any diminution of its value, arising from improper treatment, must be equally prejudicial both to the grower and consumer of that article, as to the grower and consumer of grain.

The practice of many farmers in North Britain is, to allow their hay, not only to attain its ultimate growth, but even to make some progress towards decay, before it is cut: to obtain a bulky crop, being their chief object, every other consideration is disregarded; and neither the period of growth at which the cutting ought to commence, the weather most proper for that operation, nor indeed any step of the after-management, are regulated by first rules. In place of cutting the crop during dry weather, and when it is free from every other but its own natural moisture, it is very often cut in a wet state, and on that account must remain in the swath a considerable time before it is fit for being put into cocks, during which it requires to be frequently turned and exposed to the sun and atmosphere, for the purpose of drying it: in that way, a considerable proportion of its natural juices are dissipated; and by the time it is dry enough for putting into the stack, it has lost not only its flavour, but a great part of its most valuable properties; an evil that is farther increased, if much rain happen to fall either immediately after the cutting, or at any period before it is put into cocks. In that case, a still greater loss of its nourishing properties, and a consequent diminution of its value, must happen.

The consequences of this management are felt in a variety of shapes, in every district where it prevails. In the lower districts, the mischief is comparatively small, owing to the mildness of the winters, and the great quantity of rich foggage every where to be met with, and the abundance of corn straw, and other wholesome articles of food, with which these parts abound. In the hilly and upland districts, however, the case is very different; and the loss arising from the neglect and mismanagement of their hay is great, almost beyond calculation. In these elevated regions, the winters are, for the most part, of uncommon length and severity; little straw is produced; sown grasses, turnips, and potatoes, are equally scarce. In that way, the chief dependence of the farmer, for winter food to his stock, falls upon the hay, which, when the quality is bad, and other articles scarce, induces debility and disease to such a degree, that a great part of the stock either die, or are reduced to a state of extreme weakness during the winter; and when the spring arrives, the green food has such an effect upon the bowels of those who have survived, that many of them die also.

The greatest part of the hay grown in these parts, is the produce of the wet swampy grounds, and the plants of which it consists, are of a nature that requires much judgment and attention to cure, in such a manner as to unite every advantage that might be expected from their use. When cut at a certain period of their growth, there is perhaps no species of herbage sweeter, or more tender, or that contains more nourishing juices, or is more palatable to the animals fed with it, than meadow hay. It has

already been observed, that, under the present system of management, the period most proper for cutting hay, is less an object of attention than it ought to be. Experience proves, that the greatest perfection of the herbage is met with, either immediately before it comes into flower, or as soon as the first flowers blow. At that period, it is in no shape exhausted, either by blowing a multitude of flowers, or forming seeds, and contains all the useful qualities of which its nature is capable: after that period, it daily diminishes in value, becomes tough, sapless, and unpalatable, and is not chewed without considerable difficulty. This rule applies to every species of herbage that is meant to be dried for winter food: but to coarse hay, the produce of wet or marshy grounds, it is strongly applicable; for, as we have already observed, most of the plants which grow in these situations, when they are in full vigour, are as tender, and contain perhaps as great a proportion of nourishing juices, as any other description of hay; and, when cut at that stage, and properly managed afterwards, form a valuable article of food both for sheep and cattle; but when the cutting is delayed, as indeed it very often is, till an advanced period of the season, when the plants have not only reached their ultimate growth, but begun to decay, this description of herbage becomes at once the coarsest and least nourishing of all food.

This opinion does not proceed upon theory, but upon the solid ground of experiments carefully made upon many different kinds of herbage, at different periods of their growth, the result of which establishes a fact that cannot be too generally known, viz. that plants of all sorts, if they are cut when in full vigour, and afterwards carefully dried, without any waste of their natural juices, either by bleaching with rain, or exhalation, contain, weight for weight, a quantity of nourishing matter nearly double what they do, when allowed to attain their full growth, and make some progress towards decay.

Hay of all kinds should certainly be cut at the period we have mentioned, and, if possible, during dry weather; and, in place of being suffered to remain in the swath for days, as is commonly done, women with forks or rakes should follow the cutters, and spread it in such a manner as to allow the sun and air free access to the whole. If this operation is properly performed, and the weather favourable, the hay that was cut in the morning will be ready to put into small cocks by mid-day, where it may remain for two or three days; at the end of which, if the weather is dry, they may be thrown down early in the morning, and, after being exposed to the sun and atmosphere for a few hours, put up into ricks of at least forty or fifty stones each, where it may remain with perfect safety, till it is convenient to stack it. By such treatment, every valuable quality is preserved, the hay is of a fine green colour, and possesses so agreeable a flavour, that the animals eat it with the greatest relish. Before stacking, some

attention will be necessary to render the whole as uniformly dry as possibly, especially if much rain has fallen, and the wind continued for any considerable time in one quarter after the hay has been put into ricks; when that is the case, one side will be found damp, while that which is exposed to the wind is perfectly dry; the remedy consists in turning the ricks round, which is done with great ease, by placing six or eight people, at equal distances, round the rick, with directions to thrust their hands as far as they can under the bottom, at the same time grasping a handful of the hay; when the whole are ready, let them lift at once, and move round in the direction intended, till the damp side is opposed to the wind: in that way, ricks of fifty or sixty stones may be turned with ease and expedition, and the whole rendered uniformly dry in a short time.

It has been contended by many, that there is no great necessity for being so solicitous to have hay thoroughly dry before it is put into the stack, as it will keep perfectly well even with a consideral proportion of moisture; and, should any apprehension be entertained to the contrary, all danger will be prevented, by mixing it with salt; a practice strenuously recommended by many intelligent writers.

Trials carefully made, and upon a scale so extensive as to occasion very considerable loss to those concerned, prove, beyond a doubt, that the addition of salt to damp hay is no preservative against its heating; on the contrary, if moist weather follow immediately after it is put into the stack, the addition of salt, in place of being useful, will prove hurtful; it being a well established fact, that salt, and every thing impregnated therewith, greedily attracts the moisture of the atmosphere, and occasions a degree of dampness that would not otherwise have taken place. The experience of persons who build houses with stones taken from the bed of the sea, is an undeniable proof of this; as the walls of such buildings are always damp and uncomfortable: even if they should stand for centuries; have we any reason to suppose that the case will be different when salt is mixed with hay? Either in a damp or dry state, if it is put into the stack damp, the salt will very effectually prevent its farther progress, in drying, with this disagreeable addition, that if wet weather follow, the salt, by attracting an additional quantity of moisture, will increase the evil.

The case is not materially different, when salt is mixed with even the driest hay, especially in situations where the climate is moist, and the winters long; for, if the quantity of salt employed is considerable, the continual attraction from the atmosphere during the winter months, if it does not destroy it entirely, will at least have the effect of rendering it musty and unpalatable.

But though we thus disappove the practice of salting hay when it is put into the stack, whether in a moist or dry state, there is

every reason to believe, that it will be highly salutary and useful, if applied with judgment at a subsequent period. The beneficial effects of meadows or marshes that have been overflowed with salt-water, upon the health of sheep and cattle, and the high relish they have for such pastures, are well known; the preference given by the animals is strong and decided: is there any reason to suppose that an equal preference would not be given to hay tinged with salt?

In bad seasons, when hay has been much injured by the weather, it is not only tasteless, but disagreeable to the animals in the spring, who eat it only from necessity. When that is the case, it becomes an object to mix with it any article that can remedy these defects; for that purpose, nothing is better calculated than salt, which, along with its giving the hay an agreeable taste, has a medicinal effect upon the bowels of the animals; a matter at present too much neglected, while they are feeding upon dry food. The most proper time for applying the salt, seems to be a day or two before the hay is used. At that time, a quantity sufficient for two day's consumption should be taken from the stack, and laid either in a shed or barn; a thin stratum should first be spread upon the floor, and lightly sprinkled with water from the nose of a watering-pan; a small quantity of salt should then be equally scattered upon it; after which another stratum of hay should be added; and the same operations of watering and salting repeated, till the whole quantity is gone through; it should then be well turned and mixed with a fork, and allowed to remain in a heap for one night; after which, it will be fit for use.

It is necessary to observe, that the quantity of water applied should never exceed what is necessary to damp the hay; and the proportion of salt should be confined to what will give it an agreeable flavour; a superabundance of either, in place of being useful, defeats the purpose for which they are applied. If there is too much water, it runs off, carrying the salt along with it; if too much salt, it renders the hay bitter. The salt made use of should be of the smallest kind, for the purpose of sprinkling it equally; and every possible means should be taken to prevent one part of the hay from getting more than another.

It is worthy of notice, that though the salting of hay a day or two before it is used, is in general attended with advantages, we beg leave to be understood as meaning only the coarsest kinds, or such as may have been injured by the weather; for, in every instance where it has been cut at the proper season, and well managed afterwards, the taste and flavour will be such as to recommend it to the animals, without any addition whatever; but in unfavourable years, when the quality is much impaired by the weather, especially if the hay is coarse, and treated in the manner commonly practised in the hilly and upland parts of the country, the operation of watering, with the addition of salt, will, by

softening and giving it an agreeable taste, induce the animals to eat it with advantage, in many instances when it would otherwise be rejected. It is, perhaps, in such cases only, that salt can be useful, unless it be meant as a medicine: and it is very apparent, that the hint of using salt at all, originated in the preference given to salt marshes over other pastures, by both sheep and cattle.

In treating of an article of such value and importance as hay, it is worth while to inquire, what are the most advantageous and economical modes of using it.

Every good farmer is now sensible, that when any considerable quantity either of hay or other fodder is given to horses, sheep, or cattle, at once, the effect of their breath blowing upon it, joined to other causes, renders it so disagreeable, that they soon loath and refuse to eat it; in that way a considerable part of it is lost. On the contrary, when it is given frequently, and in a small quantity, it contracts no disagreeable smell, and the animals eat up the whole. Farmers of a certain description will no doubt object to this mode of feeding, on account of the trouble with which it is attended. With them, it is a maxim, that if the animals are fed once, or at most twice, in the twenty-four hours, it is sufficient; and that if they are hungry, they run no risk of starving, while they have food so near them. They do not, however, reflect upon the injury which the fodder thus used sustains by being breathed and trod upon, and impregnated with dung and urine. Let such men consider, for a moment, how they would relish the remains of their dinner served up for supper, after being kept within a yard of their nose during the interval, upon the same plates, with the same knives and forks, without any washing or cleaning. There are few people, indeed, who would not nauseate and reject such a meal.

The case cannot be very different with any of our domestic animals, when they have a quantity of hay or other fodder given them, sufficient for a whole day's consumption; having it constantly in their sight, and being blown and trod upon, impregnated with urine and otherwise injured, it becomes loathsome beyond description; and, in place of being eat up, which it always is when small quantities are given at a time, and frequently repeated, a great part is rejected. It ought, therefore, to be a rule with all farmers, to give little at a time, and repeat it frequently, always taking care that what was last given shall be consumed, before they receive an additional supply. By such management, no part of the fodder will be lost, and the animals will at the same time derive more benefit from the use of it.

Another economical practice remains to be mentioned, namely, the mixing of straw with hay. From many trials in different parts of the country, it appears, that where good straw can be had in plenty, it may be mixed with hay to great advantage.

Some farmers are in the habit of mixing straw with cutting grass, the benefit of which will be afterwards noticed. When straw is mixed with hay, the process of curing may be accelerated, and the quality of the hay at the same time improved, by leading out the straw to the field, mixing it intimately with the hay immediately after it is cut, and putting the whole into small hand-cocks, as soon as it is mixed. It is well-known, that when moist and dry bodies are brought into contact, the former begin to give out a part of their moisture, which is as greedily absorbed by the latter, and continue to be so till a balance is established between them; or, in other words, till both contain an equal proportion of humidity. This is precisely what happens when dry straw is mixed with green herbage. Immediately after they are laid together, the straw begins to absorb a part of the juices, and continues to do so as long as the grass will part with any. In that way, every part of the natural juices is effectually preserved; and the straw, from the absorption of what would otherwise have been either evaporated by the sun, or washed away by the rain, is rendered nearly equal in value to the hay. Where this practice is followed, and due pains taken in the mixing, very little exposure to the sun or atmosphere is necessary, and the hay will be fit for putting into the stack in half the time that is required where no straw is used.

In place of leading out the straw to the field, it is customary, in some parts of the country, to mix it with the hay in the stack, by laying alternate stratums of each, a practice that answers pretty well, but is much inferior to that above recommended. It may, however, be very useful in unfavourable seasons, and be the means of preserving hay that could not be cured otherwise.

When straw is mixed with grass for present use, a quantity sufficient for several days consumption should be cut at once, and after mixing, laid up in pretty large heaps, and allowed to remain in that state for a couple of days at least; at the end of which, the straw will be found much softened and impregnated with the juices of the grass. When a fair trial is given to this practice, several advantages will be found to arise from it. The *first* is, the conversion of a considerable quantity of straw, which would otherwise have been of little value, into a wholesome and nourishing article of food; the *second*, that grass so mixed, has not that purgative quality it is known to possess in its simple state, and seems to keep the bowels in a medium state, preventing alike the extremes of scouring and costiveness, circumstances of much importance to the health and strength of the animals.

It has been recommended, and to a certain extent practised by some farmers, to mix old and new hay. Upon this point, we have simply to observe, that if old hay has been well got, and properly secured in the stack, it will be found for many purposes superior to the new; it certainly contains a firmer and more concentrated

nourishment than new hay can possibly do; and for all animals that are employed in constant and severe exertion, it is infinitely preferable. There is a period, however, beyond which, even the best old hay will, by being excessively dried, begin to be impaired in its quality, and be eaten with much less relish. In such cases, a mixture of new hay will be useful; as the old, by the absorption of the new juices, will recover a part of the moisture and flavour it had lost by long keeping. The same thing will happen, if the hay of the former year had been of an inferior quality, owing either to its having been allowed to stand too long before cutting, or to its being bleached with rain after it is cut. In either of these cases, the defect will be in some degree repaired, by mixing it with new juicy well-flavoured herbage. A. Z.

Art. LVI.—*Fruit Trees.*

[FROM THE NEW-ENGLAND FARMER.]

The following observations are prefatory to an abridged descriptive Catalogue of the fruit trees in the collection of J. B. Van Mons, a celebrated cultivator of fruit trees in Belgium, Europe. We were favoured with the manuscript by R. Manning, Esq. of Salem, Mass. for whom it was translated from the French, by Miss Elizabeth C. Hathorne, of that place. We think the remarks cannot but prove useful to all persons engaged in the raising of fruits, and especially to those who wish to create or introduce new and improved varieties of apples, pears, &c.

Translation.—Being unwilling to leave my correspondents in ignorance of the fruits which I have sent them, designated by numbers alone, I have caused the materials for this catalogue to be collected during a severe illness. There may be omissions in it, but there are no errors; and the repetitions refer to the parent stocks, and to their grafts, but are not unnecessarily employed.

In so vast an establishment, containing not less than 86,000 trees, it was impossible to inscribe at length on tickets the names of all the fruits of which we distributed grafts; and we found it at once more simple and more expeditious to mark on a slip of paper the number attached to the tree, and to point out afterwards the variety to which the number belonged.

We attached a number in lead, suspended by a wire of the same metal, to every tree and graft in the garden, as well as to

every sauvageon (ungrafted tree, raised from seed,) from which we gathered fruit, and we noted in catalogues the names or the qualities of the fruits to which these numbers referred. We have thought it expedient to have those catalogues printed.

There are in the first series many numbers to which no descriptions are annexed, because they are occupied by old varieties generally known. The vacant numbers in the second and third series belong to new varieties which have not answered the expectations formed respecting them. Some vacancies are also left by duplicates and triplicates of the same variety, which we had received under the same names.

We have, as far as possible, given the names of the authors of the fruits. By its patrons, signifies that it was found by the cultivator whose name it bears. By ourselves, that it is the result of our endeavours. The articles designated by numbers alone, are necessarily products of our culture.

I have added in my catalogues the approximative forms of my new fruits, though nothing can be more uncertain than this characteristic, for the form of a pear varies during 12 or 15 years before it is definitively fixed; and there are some which never attain a fixed form, as the Bon Chretien d'hiver, the Beurre Rance, &c. I have compared them to known varieties. I might here compare them to the wild fruits of the same species (sons especes des bois,) but in countries where the kind does not grow spontaneously, there would have been no point of comparison.

We admit into this catalogue only the species which we have been able to send to our correspondents, under the form of grafts, such as the pear, apple plum and cherry tree. We have, however, discoverd a method of conveying under the same form the peach and the apricot tree. It consists in grafting them on the summit, or on the bourgeons (bud's eyes) of the plum tree, and sending the grafted branch before or after the developement of the eye, to be grafted *en feute* (or cleft or slit-grafting) on another plum tree. We have never yet found this method to fail.

There are many numbers which have not yet received names, because we thought it right to name only the varieties, which in our judgment merited the title of *tres a propager* (eminently worthy to be propagated,) which expressed the highest excellence that a fruit can attain, and requires it to be superior to a St. Germain, a Beurre Gris, a Chaumentelle, a Colmar, a Cressane, &c. Respect to the persons to whom we offer the homage of our fortunate acquisitions by bestowing their names upon the fruits, exacts from us this extreme reserve.

This distinction between fruits *a propager* (to be propagated) and those *tres a propager*, is solely for ourselves, who are so rich in this last quality of fruits, which unites elegance of form, and amplitude of size, to the utmost delicacy of flesh and of juice, while we are so poor in subjects for grafting. The words excel-

lent, exquisite, delicious, annexed to a great number of our new fruits, are equivalent to the declaration that they are as good as the best old varieties.

In another position than that in which we are placed, we might enlarge on the origin, the form, the qualities, I will say the defects, the epoch of maturity, and other particulars of the fruits bearing names. In the next supplement, if it be ever published, we may, perhaps, revert to these detail; but at present I can only cause to be transcribed the judgments pronounced upon each variety, and consigned to my notes.

It may be asked, how we have been able to obtain from our seed-plots so many fruits, so extraordinary in all respects? We answer that our method has been to renew incessantly the old varieties, acknowledged as exquisite. By renewing we mean planting always the kernels and stones of the last produced, regenerating thus from father to son. We said to ourselves once for all, that the more a species, being propagated from seed, and at the same time by shoots or suckers, is removed by being repeatedly sown, from a state of nature, the more it must approach a state of art. We have since acted in conformity to this principle, and already at the third renewing, the fruit of the peach and apricot tree is no longer of ordinary merit, and at its fourth sowing the apple is reproduced constantly exquisite. This has not been the case with the pear tree, which still produces ordinary fruit, though no longer bad. But for this characteristic of the pear, and especially that of the incessant variation of its form, pomological researches would be already without an object, and the study of fruits would consist only in a dry acquisition of names.

Our seed plots were differently treated according to the species The pear trees were planted in squares, and the apple trees were placed in one of the corners of the garden: these species were never planted together. The peach and apricot trees, sown confusedly, were removed only to be placed where they were to remain. The growth of all was restrained by pruning till the moment of permanently placing them; and at transplantation the branches were slightly drawn together, and the roots forcibly so, in order to make the latter subdivide, which causes the tree to bear early. After the transplantation they were not touched. In the second year we examined the pear trees, leaving only those of good appearance, and choosing the others to graft upon. This grafting could not be performed without removal, because the growth of the sauvageons would immeasurably outstrip that of the grafted trees. We therefore raised the trees, just before the frosts, and placed them *en jauge* [in casks or barrels,] in order to graft upon them by copulation, and out of the earth at the end of February; or we grafted them in this manner before the beginning of winter. These grafts have endured with perfect safety the severity of the past winter, This method is preferable to every other

for the pear tree and the apple tree. The suffering, which in this case is common to the tree and the graft, secures its taking and determines an equal force of developement. It might be called *the graft on one's knee*, or *the graft at the corner of the fire.* It is the only one which should be practised, except *en feute* (slit cleft) for the paradise and the quince tree, of which every piece of a trunk, branch or root only, two or three inches long and two or three lines thick, may be made useful as a subject.

This selection of subjects for grafting does not prevent our trees from being so near each other as to shoot into the air, like arrows, and to resemble Italian poplars rather than ordinary pear trees: they were not forced by the knife to take a direction contrary to nature; and these trees, so high, so straight, with branches so regular, and unapproached by any insect, were every year covered with fruit from the summit to the foot. The great art in giving to a tree *au vent* (not trained in any particular shape) a regular form in maintaining the equilibrium between its branches, is to make it take from its birth a right direction by attaching it to a proper support.

The new fruits have over the old the advantage of yielding a rich and constant crop, and of exemption from falling off and from alteration. They are less liable to any malady.

When a peach tree is raised from the stone and *au vent*, it is as unnecessary to despoil it of its branches as to thin it of fruit; in the third year, it puts forth only short branches, which bear without intermission, and whatever be the number of the fruits, the smallest is not less savory than the largest; the flesh of the peaches of seed plots remaining long transparent and greenish. This is also the case with the nectarine, whose fruit *au vent* may be preserved from insects.

I was at first in the habit of placing a graft of the most distinguished of my sauvageons on a lateral branch of a mature tree; but I have always observed that this branch and the parent stock began to bear the same year, so that while the trees were mutilated, nothing was gained in precocity of crop.

It will be perceived that in our last catalogues, the number of fruits inscribed *excellent* is much more considerable than in the first: this proceeds in part, it is true, from our more extended cultivation, but also from the circumstance that in proportion as we advance in renewing the varieties, the number of distinguished fruits is multipiied.

We also remark, that the more the fruits are renewed, the fewer early varieties do we obtain; for example, in the last year few of our apples and pears of the first crop ripened before winter; and even at this moment (March) I have a great number which are not ripe, and which ripen successively as they advance in merit. It is true that in the selection of sauvageons, we remove all the pear trees that are without thorns and with stout branches and

large leaves, as these are signs of precocity, and all the apple trees whose appearance resembles too much that of the early varieties.

It will be observed, that we have principally directed our endeavours to the improvement of pears. This was natural, because the pear has not hitherto been reproduced identically, but under astonishing deviations, which have hardly permitted comparisons. We have, in our thousands of results, obtained forms which resembled each other as to the fruits, but the appearance of the tree, the wood, the foliage, were entirely different; and when two trees had some resemblance in appearance, wood and foliage, the fruit was totally distinct. The following was my mode of passing judgment upon the varieties. I invited to dinner a friend, whose taste in fruits was exquisite, and we tasted together; then I made my two gardeners taste; we discussed for a moment the merits of the fruit, and I consigned the judgments to my notes, with the very expressions which are found in the catalogue. As fruit whose period of maturity is not yet known must be gathered at different times, and at intervals of ten days, we had never less than two hundred sorts to taste. The No. attached to the trees was transcribed upon each fruit. Every variety judged very good, and of the highest quality, was afterward gathered and distributed to connoisseurs, on condition of returning the stones and the kernels: we have never sent a good new fruit to the market; we chose to allow it to rot in order to preserve the seed, rather than to sell it at a high price.

I was obliged to quit Brussels when almost all my sauvageons of the fourth and fifth renewing were about to bear: an object of public utility claimed the ground which my establishment occupied: I shall, perhaps, be compelled to leave my new gardens when nearly all my sauvageons of the sixth and seventh renewing are covered with flower-buds. I see that the more the renewings are multiplied, the earlier the sauvageons begin to bear: a great many of our pear trees of three and four years old will produce this year.

In the inevitable disorder attendant on the destruction of an immense cultivation, effected during the severity of winter, it was impossible not to lose some varieties, though we took grafts of all the most precious, and though of these grafts, placed double in April and May on trees out of the earth and half dry, very few perished. To gather grafts and to abandon the trees was all that we could do at such a moment, and when we could ourselves be present only for a day and a half in the week. We are consequently obliged to request our correspondents to return us grafts of those lost varieties, which are in their possession.

Art. LVII.—*On Draining.—Addressed to Young Farmers.*

(Concluded from page 333.)

Now for the rotation and culture.

Lands of this kind seldom form but a small portion of a whole field, and are therefore not often put under a different rotation. Say that it is the common three shift rotation, or 1. Corn. 2. Wheat. 3. At Rest. When the winter comes preceding the year for corn, the land has been two years without a ditch being cleaned out: and if grazed, the treading of cattle and rooting of hogs, have been, aiding greatly to fill them up. If not grazed, the richness and wet state of the land have made it a wilderness of weeds and rubbish growth, of all kinds. In the latter case, ditching in autumn would be almost impossible; but even if kept bare enough by grazing, no farmer has leisure for a heavy job of ditching before winter. At all events, it is never done. The land treated as I have stated is almost as wet as if no draining had ever been done—nay, it is often much the wetter for the work miscalled draining. But little of wet ditching can be done in cold weather: so it is in March, before the old drains are opened. Still the land is very wet from having remained so long water soaked—and it is ploughed before it is dry enough, because the season is too much advanced to wait longer. Under such circumstances the land cannot produce near a full crop, even if the draining was then perfect, and continued effectual for the remainder of the year. During the following crop of wheat, the drains are filling, and seldom opened, and during the year of rest afterwards, the former water soaked condition of the land is completely brought back.

This picture does not in every particular apply to all such lands, even when most badly managed: but some of the traits will suit all, not excepting some in the hands of the best farmer: for in the management of low-ground especially, we often want the means to perform what our judgment directs should be done. For example—who is there who does not pronounce, when ditching in March, that he ought to have done the work in September? and who is there who profits by his own opinion and experience, so as to avoid the same error in future?

I now proceed to propose plans for draining and cultivating soils of this kind, all of which I have tried with success to such extent as was permitted by the situation of the land in my possession, and the circumstances under which it was placed.

It will perhaps be more plain to apply instructions to a particular case of common occurrence, than to attempt to embrace every variety of circumstance and difficulty. For this purpose, suppose the land under consideration to vary from 100 to 150

yards wide, the alluvial formation of a stream strong enough to turn a common mill, and which flows through in a very crooked channel in ordinary, and commonly overflows the whole bottom with every very heavy rain, or perhaps two or three times a year. The average descent of the stream and the land, from six to fifteen feet in a mile. The soil is a rich sandy loam. Subsoil various: sometimes layers of sand within reach of deeping ploughing, sometimes of clay, and sometimes (though rarely) the rich black surface soil shows no change for several feet in depth. We suppose farther that the land has been cleared and cultivated long enough to give the plough generally a free passage.

Lowgrounds of the kind under consideration are in general more exposed to water from numerous springs oozing out of the adjoing highland, than from the main stream—and therefore the removal of the former first demands the farmer's care. But neitheir the side, central, or cross drains can be finished, before the other kinds are in progress—and it will suit my arrangement best to speak first of the ditch or carrier of the main stream. The side drains require most skill and care, and their consideration will hereafter be undertaken. For the present, let it be understood that the side and cross drains are in the usual imperfect state of operation, serving to permit the imperfect cultivation of the lowground.

The great object is to give the main stream the shortest and best course through all the extent of lowground to be drained. With this view, the shape of the ground, and the force and size of the floods should be well considered, and the new course for the stream determined accordingly. In general, it will be cheapest to adhere nearly to the straightest course—which in a crooked bottom, will cause the line to touch the projecting points of highland, first on one side, and then on the other. But desirable as are long straight stretches, we must take care to change their direction very gradually, when a change is necessary. In a long straight course, with sufficient descent, the water acquires a force which enables it to keep its direction, in spite of considerable obstacles—and will rush across, and will fill up with its deposite, any part of its channel which turns off at an angle, or with a short curve. To avoid this danger, it will be sometimes proper to begin a gentle curve before reaching the point where it will necessarily be made. There is another case in which straight courses should be departed from—that is, when with no great variation of direction, or increase of distance, the main carrier may be made to keep along the side of the lowground for a considerable distance, which will so far serve to avoid the trouble of another side drain, and also preserve the low ground in one unbroken body, at that place. But desirable as it certainly is to have the stream kept at the side of the lowground, it should not be done unless

the location is good with a view to perfect drainage. A ditch at the junction of the low and highland, is far more subject to be filled with rubbish and earth brought by rains, than if in the body of the low grounds—and, therefore, if so situated, its course must not be too crooked, nor the force of the current too small, to guard against that danger.

When the line for the ditch has been fixed, it should be marked off by stakes, wherever not plainly enough exhibited by some existing marks. It will be generally found that the line will divide the lowground into large pieces, shaped something like segments of circles, the straight sides of which will be the new line for the stream, and the curved sides made by the hollow bends of the inclosing highland. The new line will probably cross in many places the serpentine bed of the stream. The work should be commenced in the dry season, and on the dryest parts of the land, if any are too wet for the operations required.

On a part of the new line, say from 50 to 200 yards in length, and extending from the old stream at one place of crossing, to another, lay off with a plough, well and deeply, a *land* of about 12 feet wide, the closing water furrow of which will be the centre of the intended canal. This width of ploughing will be sufficient, if a passage for the water six feet wide and 2½ feet deep will serve: but the larger the canal is desired, the wider should be the ploughing. Such a stretch as is here spoken of, is supposed to pass through the body of lowground. As soon as the plough has cut a few furrows, labourers with broad hoes begin to draw out the loosened earth, and to deposite it, with very little regard to accuracy, on the land outside of the ploughing. When the plough has closed its work and formed a deep water furrow, it begins again and goes over the same land, whether the hoes have finished ahead or not. A third time the same operations may be repeated, or until the ditch is either nearly deep enough, or the bottom has become too miry for the horses to walk on. In this manner, the greater part of the digging and removing of the earth may be done at a very small cost, compared to spade work. Still there remains something for the spades to finish. After the last ploughed earth has been drawn out, the ditch of the desired width (say 5 to 7 feet) should be accurately laid off by a line, and by the stakes first set up to mark the course. A single spade's depth will generally give sufficient depth, and the work will be very easy to perform. There is no need, generally of digging low enough to divert at once the stream to the new course. It will be sure to take the new and straighter course at every rise of water, and will naturally deepen the new, and at the same time be filling up the channel. This operation may be hastened by opening well the upper end of the new channel at each crossing place, and obstructing somewhat the old passage just below by the tow of a tree or other

rubbish, which though serving to impede the floods, will not prevent the passage of the stream in common times. It would be improper to stop the water entirely from its old channel, as that would prevent its being filled up, and it would remain in the way of cultivation. But if a current has choice of two channels, united above and below, the one straight, and the other crooked and twice as long, the effect will certainly be, sooner or later, to deepen and enlarge the first, and to deposite its mud and sand in its lower passage through the second, until it is entirely filled. It is much cheaper to let nature thus aid your draining operations, than to dig the carrier at once as deep as desirable.

When the first rough part of the excavation, by ploughs and hoes, is finished through one stretch, it may be begun on some other—either adjoining, or distant, as may be most convenient. As the old channel for a long time will continue to convey the stream, it serves to keep the new work in different dry sections, to be opened as may be convenient. Adjoining sections should be connected as soon as possible (and by the spade if necessary) so as to have the benefit of any flood of rain that may occur.

When the main carrier is intended to be made for some distance along the margin of the highland, the earth must be thrown by the plough altogether towards the lowland. For this purpose, it will be cheapest to use a hillside plough, which by shifting the mould-board, turns the furrow slice to the same side, whether going up or down. If a common plough is used for such places, it must cut only when driven down the course of the valley, and be dragged back empty, to begin another furrow, at the upper end of the stretch.

If the owners of lowgrounds would act according to their true interest, this plan would be extended as far as the nature of the land required it, without regard to who might be the owner of any particular spot. Then each proprietor would be benefited by the drainage of the land below, serving as an outlet or vent for his own. But that is not now to be counted on, and each person must expect his drains to end with the lower termination of his land. If there is much fall in the stream at that place, the injury from this stoppage will not be considerable, except, perhaps, to the next land below. There, the water increased trebly in velocity by its clear passage above, and finding no straight or sufficient channel below, will probably rush over the land, and expose it to all the damage which the owner will well deserve to sustain. If on the contrary, the fall is inconsiderable, as in the swamps before described, the lower land holder could render ineffectual the draining of the land just above. In such cases, a good vent to the water below is highly important, and the want of it may destroy half the benefit which might be derived from the whole drainage.

When streams are thus straightened, and their sides kept clean and smooth, they will carry off quantities of water that could not be kept within the former stream, even if four or five times the superficial extent. But I do not mean that inundations will be altogether avoided, though they will be comparatively rare—and when they occur, will be of short continuance.

But there is an objection (and unfortunately a very general one) to all such schemes of drainage. Streams are generally made to serve in dividing lines between different properties, and that circumstance alone is sufficient in most cases, to prohibit any rational scheme of draining. When lands were first taken up under the old patents, and sold out without accurate surveying, a stream was a very convenient land mark, because it could not easily be changed or mistaken. But for the drainage and proper cultivation of the lowground, the stream is the worst dividing line that could be fixed upon. All my foregoing directions on this subject must rest on the supposition that one person owns both sides of the stream—or that the different owners are willing to concur in the best general plan of drainage, and in the exchange of points of land cut off by the new carrier of the water. Either of these cases is so rare, that I must agree that the directions I have written are almost useless, and an unprofitable waste of the time of my readers, as well as my own. However, should I find that any value is attached to my suggestions, I may resume and finish my observations, as at first designed. It remains to treat of side drains, open or covered, intended to intercept springs having their sources in the highlands.

R. N.

PART III.

MISCELLANEOUS INTELLIGENCE.

Protection of Fruit.—Being in conversation the other day with one of your subscribers, he said you had missed it when writing on Fruit Gardens; and that he knew of a better way to protect them than to plant hedges: he kept a cosset in the lot, and every rogue that entered was glad to escape as he might. I inquried how he managed to get fruit for himself, or his folks? O that was not difficult: the ram would come to the fence when any of the family approached, and by throwing a rope over his horns, he was secured till they got what they wanted.

Though liable to some objections, I was pleased on the whole with the plan, and have concluded to send it for your consideration.

ANOTHER SUBSCRIBER.

[We thank our correspondent for his letter; and have no objection to reconsidering the subject. We are by no means convinced, however, that we have over-valued the benefits of hedges. We are satisfied that fences of that kind may be trained, through which no marauder would venture; and farther that such will eventually be found the *cheapest* way to inclose a fruit garden. Where we place them, there we shall find them. The cosset may serve for a while; but rogues are very inventive, and may learn to circumvent an animal of such humble pretensions to intellect. A good dog would be more suited to our taste. A friend of ours, had a fine melon patch exposed to the view of every traveller, and the fruit was much in danger of taking a wrong direction. He, therefore, made a comfortable lair in his garden for *Towser*, who appeared to understand the object for which he was placed there, quietly composing himself whenever he was shown to his bed. One night, some ruffians were much more eager to escape than to steal; and our friend who was disturbed by the outcry, on coming to the door, could hear them at a distance in rapid retreat.]—*Gen. Far.*

What to do with it.—Mr. Editor—Many persons ask, "what shall we do with it?" when we persuade them to abandon ardent spirits. I answer destroy your enemies with it. The house of an inn-keeper of my acquaintance was very much infested with vermin; he resorted to many different methods but could not destroy them; at length he thought of the effect ardent spirits had upon his two legged customers, and he resolved to make an experiment. Accordingly, he prepared a pan of black-strap, set it in the cellar and waited the event. The next morning he found fourteen large rats lying helpless around the pan. It is needless to add, he pursued this device until his house was cleared of rats and mice.

A farmer's corn was much annoyed by a bear, which he was not able to destroy until he thought of rum. He procured a vessel of well sweetened rum, and the next morning bruin was too rich and happy to go or stand. A few have found that corn strongly saturated with rum, will take away the use of leg and wing from crows. One old farmer told me last summer that grasshoppers loved it too. Now I say; neither throw away nor burn ardent spirits,

nor for conscience's sake murder human beings with it—but destroy grasshoppers, bears, and crows. Foxes, I presume, are too cunning to drink it.

A. B. N.—*Ver. Watchman.*

Air Plants.—These attach themselves to the driest and most sapless surface, and flower as if issuing from the richest soils. "A specimen of one of these, which I thought curious," says Dr. Walsh, "I threw into my portmanteau, where it was forgotten: and some months after, in unfolding some linen, I was astonished to find a rich scarlet flower in full blow; it had not only lived, but vegetated and blossomed, though so long secluded from air, light and humidity." The barren pine is not less extraordinary. It also grows on sapless trees, and never on the ground. Its seeds are furnished, on the crown, with a long filmy fibre, like the thread of a gossamer. As they ripen they are detached, and driven with the wind, having the long thread streaming behind them. When they meet with the obstruction of a withered branch, the thread is caught, and, revolving round, the seed at length comes into fixed contact with the surface, where it soon vegetates, and supplies the naked arm with a new foliage. In Brazil it grows like the common plant of pine apple, and shoots from the centre a long spike of bright scarlet blossoms. In some species, the leaves are protuberant below, and from vessels like pitchers which catch and retain the rain water, furnishing cool and refreshing draughts to the heated traveller, in heights where no water is to be found. The quantity of this fluid is sometimes very considerable, and those who have attempted to reach the flower-stem have been often drenched by upsetting the plant.—*The Vegetable World.*

Lightning Conductors.—It is fancied that it is quite sufficient to put up an iron rod, with one end in the ground and the other a few feet higher than the roof, to protect a building from lightning. It should be impressed on the public that conductors, unless perfectly insulated, are calculated to produce the disaster they are intended to prevent. The best mode of insulating them is for them to pass through glass rings, and in no part to be in contact with any thing but glass. The lightning conductors placed on the Royal Exchange at Paris are a perfect model in this respect.—*Penny Mag.*

Salt on Corn.—A farmer in Alabama, in curing his crop of corn, finding it rather too damp to keep safely, tried salting it, as our farmers salt their hay. The experiment was quite successful.

As his corn was thrown in a pile on a large floor, he sprinkled it with salt, using from half a bushel to a bushel of salt to five or six hundred bushels of corn. The corn kept well, never become musty, *and never had any weevil in it.* Mr. B. still had of his corn when he had communicated this information to us; and he stated that the bread which it then made was so sweet and good, that it was esteemed preferable to that made of new corn. He also stated that he was not under the necessity of purchasing any fodder for his working oxen last winter, they fed upon the husks of this corn so freely; and he added that they kept in excellent order. Mr. B. was so well pleased with this experiment, that he is putting up all his corn this year in the same manner, using about half a bushel of salt to five hundred bushels of corn, which he thinks is enough.—*Amer. Far.*

Effectual remedy against the ravages of the Hessian fly.—Take one quart of *chamber ley,* and one quart of *slacked stone lime;* stir them well together, and mix them with a bushel of wheat, just as you are going to sow.

This easy preventive of the ravages of that destructive insect, has repeatedly been tried by a number of farmers, who can vouch for its efficacy.—*Ib.*

Cut Flowers.—To more conveniently enjoy the sight of flowers, they are often plucked and placed in jars of water in the dwelling. By changing the

water, or adding alkalies every day, they may be perpetuated without fading for many days, even to the period of falling from the parent stem. Lime, magnesia, or soda, may be used in moderate quantities, such as to give natural sustenance to the detached shoots in preservation. They may be made a luxuriant and appropriate ornament to the drawing-room or parlour; and in the more humble dwelling of the labourer, how cheerful appears the white-washed room and broad fire-place,

> "Whose hearth, except when winter chills the day,
> With aspin boughs, and flowers, and fennel gay,"

throws out its soft perfume to the air.—*Ulmus.*

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To restore tainted beef.—"In the last fall, I procured an acquaintance of mine in the country to put up in a barrel of fat beef for my family's use during the winter. The barrel of beef was sent to me agreeable to contract; but before I had used one quarter part of it, I observed it tainted, and so much so as to smell quite offensive. The beef being very fat and fine, I was loth to throw it away. I made the following experiment: I procured a half bushel of charcoal, and after taking out the beef and throwing away the offensive pickle, I re-packed it in a barrel, laying the pieces of charcoal between the pieces; and making a new pickle, adding a little salt-petre. I covered the beef, and in about six days found it as sweet and good as it was when first put up.

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Caution to Horticulturists.—The time to commence budding fruit trees having arrived, we would recommend to new beginners to be exceedingly careful in the selection of scions or buds for insertion, as there are many trees which are diseased, and in some instances, disease seems to be as capable of being transmitted from one subject to another by infection, as in animal creation. There is one disease, which, so far as we are acquainted with it, is confined to Peach trees; which from the effect first produced upon the trees to which it is communicated, tends greatly to its extension; that it is the early maturity, or rather the appearance of early ripening of the fruit. It is an object with most cultivators, to procure early fruits, and as a peach tree which has the disease alluded to (which is called the yellows, from the general appearance of its foliage,) ripens its fruits some four weeks sooner than it would were it free from this disease, scions are often taken from such trees, supposing them to be early varieties; and when once a bud from such a tree, is inserted in a healthy one, from that moment the tree so budded becomes infected, and its decay is certain. We have at this time a young seedling tree, into which a bud from a diseased tree was inserted the last year, under an impression that it was an early variety, but which we afterwards found was from the effects of disease, when we cut the bud from the young tree in hopes to save it, but it was too late; this season it exhibits all the marks of disease which threatens soon to put a stop to its vegetable life. So virulent is the infection of this disease, that barely pruning a healthy tree with a knife that has been used to prune a diseased one, will communicate it. One of our neighbours has a tree, into which a single bud was inserted at the same time that our own tree was budded, the fruit of which at this time, has all the appearance of being ripe, though not larger than large size nutmegs. The premonitory symptoms, (as our Doctors say,) of this disease are, the leaves becomes of a light yellow, decrease in size, but increase in numbers, and the young branches often shoot forth in small tufts, the points of which often wither during the last of summer. In some instances, the trees so effected will live two or three years; but we believe never recover. As the greatest care is necessary to prevent the spread of this disease among peach trees, we have thought fit to caution young horticulturists, that they may not experience the same evil that we have, viz: the loss of many trees; and to such we would say, be not over anxious to bud from imported young trees, until their health and properties are preperly tested.

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Brimstone for Cattle.—Dr. Bartlett—It is probably not known to many of our farmers, that brimstone is valuable for cattle in keeping them free from

ticks. These vermin are not only filthy in their appearance, but an injury to cattle. A piece of brimstone as large as a grain of corn, well pulverized, given in a little salt, will cause them to drop off, and prevent others from getting on for eight or ten days. I consider brimstone as necessary for a cow in the summer, as salt. JACOB.—*Southern Planter.*

Preserving Bacon.—Dr. Bartlett—There is much said about preserving Bacon. I have noticed in all the communications on the subject, that it is recommended to have the bacon *well dried;* and I think this is the principal thing required. If bacon is not well dried, there is nothing that it can be packed in, that will keep it sound. When bacon is hung up for drying, boards or plank should be laid on the joists over it, in order to keep dirt or dust from falling on it, also to keep the smoke from escaping too soon. A smoke should be kept under it till it is thoroughly dry, and be continued in wet weather in the summer. Whoever will follow this plan will save their bacon. B. C.—*Ib.*

A Prolific Cow.—Mr. Edward Putnam, of Warsaw, has a cow which brought three male calves this spring. They are all living and doing well, and so nearly resemble each other that, it is said, if viewed separately, it is impossible to distinguish one from another. Within three years this cow has been multiplied eight fold.—*Batavia Advocate.*

Great Herds of Cattle.—Mr. Gwin of Madison County, Ohio, keeps 1200 head of cattle for which he has ample lands and inclosures; and many of his neighbours who are in the cattle business, have herds of from two to eight hundred, and lands in proportion. It is wonderful to those who can carry back their recollection for a few years, when the whole state was an entire wilderness, to behold Ohio now outstripping most of the old states in population and agricultural improvement.

Cure for a Film in the Eye of a Horse or an Ox.—Edward S. Jarvis, Esq. of Surry, Me. in a letter to Mr. Joseph R. Newell, proprietor of the Boston Agricultural Warehouse, states as follows:

Have you ever heard of a cure for a film on the eye of a horse or an ox? I was told of one eighteen or twenty years ago, and have been in the practice of it ever since with perfect success It was brought to my mind by just having had proof of its successful application in a calf that had its eye hurt by a blow from another creature. A film formed over it, and it was thought its eye was lost. But by turning into the opposite ear, a great spoonful of melted hog's fat, it was cured in 24 hours. I do not pretend to account for this, but I have seen it tried with success so often, that I think it ought to be made public, if it has not been before. I learned it of an Indian.—*N. E. Far.*

Lemon Tree —In the green-house of the late Hon. T. Bigelow, of Medford, there is a lemon tree, which, besides its foliage, its buds and flowers, has on it about three hundred lemons. These are, of course, of all sizes, from the smallest to the largest, which are sixteen inches in circumference. The tree is supposed to be about 50 years old. It was given to Mr. Bigelow by the lady the late Hon. William Gray, about 25 years ago. It is emphatically a perennial—being never without foliage, flowers and fruit. Perhaps some of the credit of rearing and perfecting this splendid exotic may belong to the gardener, whose watchfulness and care have been applied to it during the whole time that it has been in its present place.—*Boston Courier.*

Ashes.—A correspondent informs us, that from his own experience and the opinion of the best farmers, he is satisfied that a bushel of good ashes is worth a bushel of corn, to put on corn, flax, grass or a garden; and he is surprised that any person should continue the practice of selling ashes for pot-ash, at the trifling price of 8 or 10 cents a bushel.—*Hampshire Gaz.*